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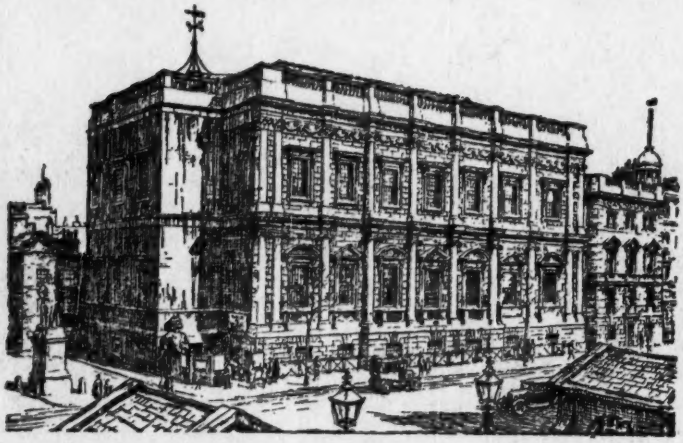

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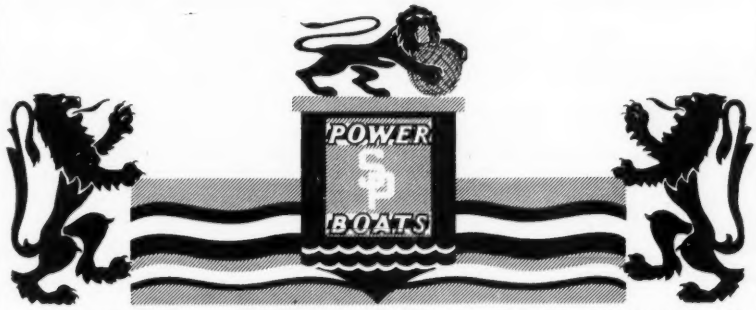

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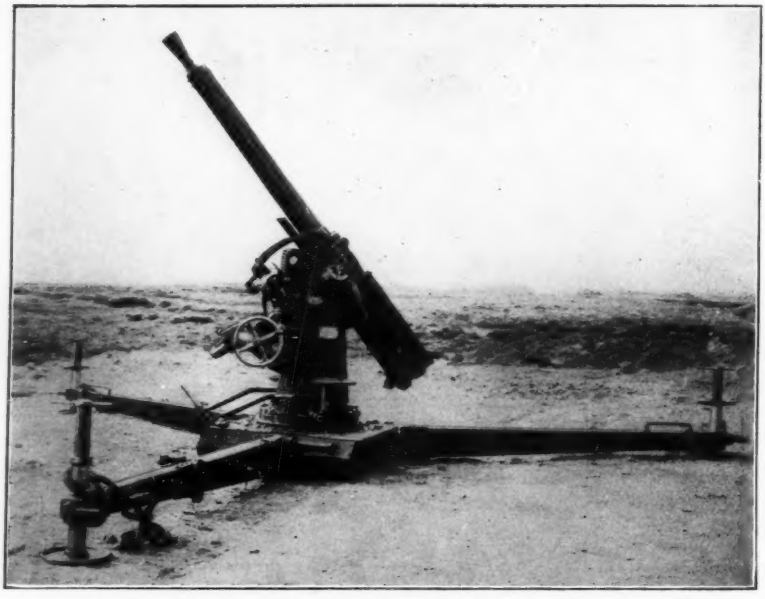

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President of the Royal Naval College, Greenwich : Vice-Admiral C. E. KENNEDY-PURVIS, C.B.
Commandant of the Imperial Defence College : Vice-Admiral T. H. BINNEY, C.B., D.S.O.
Director of the Royal Naval Staff College: Rear-Admiral W. S. CHALMERS, D.S.C., R.N.
Commandant of the Staff College, Camberley : Major-General B. C. T. PAGET, D.S.O., M.C.
Commandant of the R.A.F. Staff College, Andover : Air Vice-Marshal A. S. BARRATT, C.B., C.M.G., M.C., *p.s.a.*

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Lieut.-General H.H. THE MAHARAJAH OF BIKANER, G.C.S.I., G.C.I.E., G.C.V.O., G.B.E., K.C.B. (India).

STAFF

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Librarian and Curator : Colonel E. L. HUGHES, D.S.O., O.B.E.
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Assistant Executive Officer : Captain S. J. PARKER, M.C., D.C.M.
Assistant Librarian : Captain P. S. M. WILKINSON, R.A.R O.
Auditors : MESSRS. BARTON, MAYHEW & CO.,
Alderman's House, Bishopsgate. E.C.2.
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MEMBERSHIP

Full particulars of Membership with alternative forms for Bankers' Orders can be obtained on application to "The Secretary, Royal United Service Institution, Whitehall, London, S.W.1."

Commissioned Officers of *all* H.M. fighting Services, including those of the Dominions, Colonies and India, and Midshipmen of the Royal Navy, Royal Naval Reserve and Royal Naval Volunteer Reserve, are eligible for membership without proposal or ballot.

Naval, Military and Air Force Cadets are eligible on the recommendation of their Commanding Officers.

An Officers' Mess may subscribe to the JOURNAL, but is *not* eligible for membership.

TERMS OF SUBSCRIPTION

ANNUAL MEMBERS.—Subscription £1 5s. 0d., payable on joining and on 1st January yearly. (NOTE.—The Entrance Fee has been temporarily suspended).

LIFE MEMBERS.—

(*a*) £20 0s. 0d., payable in one sum or;

(*b*) £21 0s. 0d., payable in four instalments of Five Guineas, the first on joining, the others on 1st January of each succeeding year.

The above rates of subscription entitle Members to the loan of four volumes at a time from the Library, provided they are at Home or at those stations abroad where arrangements exist for forwarding books.

It is important that Officers joining should furnish full and clear particulars of their Name, Rank, Ship, Regiment or R.A.F. Squadron, etc., and the address to which they wish their JOURNALS sent.

Officers of the Indian, Dominion and Colonial Naval, Military, and Air Forces temporarily in the United Kingdom may become members for a period of six months on payment of Ten Shillings and Sixpence, or One Guinea for twelve months. The additional subscription to the Lending Library is Five Shillings for six months.

THE INSTITUTION

The Royal United Service Institution is situated just below the War Office in Whitehall. It has the best professional Library in the United Kingdom; a Lecture Theatre, where an autumn and winter session of lectures is devoted to subjects of current or historical Service interest. The Reading and Smoking Rooms are provided with the leading papers, periodicals and writing materials.

The Institution is open daily from 10 a.m. to 7 p.m., except Sunday, Christmas Day and Good Friday.

THE JOURNAL

The R.U.S.I. JOURNAL is published quarterly and sent post free to Members in any part of the world. Copies may be purchased by non-members, price 7s. 6d.

THE MUSEUM

Situated in the Banqueting Hall of the old Palace of Whitehall (1622), with its magnificent Rubens ceiling, the R.U.S. Museum is a treasure house of relics and mementoes of great victories and renowned warriors. There is also a most valuable collection of Uniforms, Medals, Ship, Tank, and Aircraft Models, and models of the battles of Trafalgar and Waterloo.

For Members and their friends, there are private entrances to the Museum from the Institution.

H.M. Forces in uniform are admitted free at the public entrance.

Admission to the general public is 1s.; Wednesday and Saturday after Noon, 6d.

SECRETARY'S NOTES

February, 1939.

Anniversary Meeting

The Anniversary Meeting will be held at 3.30 p.m., on Tuesday the 7th March, 1939. The Council will present their Annual Report and Accounts, and there will be an election to fill vacancies on the Council.

The Gold Medal and Trench Gascoigne Prizes will be presented.

Copies of the Annual Report and Accounts can be obtained on application to the Secretary.

Retiring Members of the Council

The following Members of the Council, having completed three years service, retire :—

ROYAL NAVY

Rear-Admiral B. C. Watson, C.B., D.S.O.

REGULAR ARMY

Major-General J. R. M. Minshull-Ford, C.B., D.S.O., M.C.
Brigadier R. P. Pakenham-Walsh, M.C.

TERRITORIAL ARMY

Colonel J. Josselyn, C.M.G., D.S.O., O.B.E., T.D.

ROYAL AIR FORCE

Air Chief Marshal Sir Hugh Dowding, G.C.V.O., K.C.B., C.M.G.

Council

Representative Member

Captain J. H. Godfrey, R.N., has succeeded Vice-Admiral J. A. G. Troup, C.B., as a Representative Member of the Council on taking up the appointment of Director of Naval Intelligence.

Ex-Officio Member

Vice-Admiral T. H. Binney, C.B., D.S.O., has succeeded Air Marshal Sir Arthur M. Longmore, K.C.B., D.S.O., as an Ex-Officio Member of the Council on taking up the appointment of Commandant of the Imperial Defence College.

The late Colonel C. H. Colvin, C.B., D.S.O.

The Council regret to have to record the death of Colonel C. H. Colvin, C.B., D.S.O. He served as one of their Members from 1914 to 1936. He was a member of the Museum and General Purposes Committee from 1914, and Chairman of that Committee from 1925 to 1935; and a member of the Finance Committee from 1921 to 1935.

New Members

The following officers joined the Institution during the period 17th October to 18th January :—

ROYAL NAVY

Captain E. G. Jeffery, R.N.
Lieutenant-Commander W. Evershed, R.N.
Paymaster-Lieutenant P. J. Douglas, R.N.V.R.
Commander J. W. M. Eaton, R.N.
Vice-Admiral the Hon. Sir Alexander R. M. Ramsay, G.C.V.O., K.C.B., D.S.O.
Midshipman A. I. Merritt, R.N.
Lieutenant T. C. Seddon, R.N.
Midshipman F. C. Saunders, R.N.
Captain E. Hamilton-Bate, R.N.
Paymaster Commander S. G. H. Leyh, R.D., R.N.R.

ARMY

Captain J. E. Swetenham, 5th Royal Inniskilling Dragoon Guards.
Lieutenant J. Mottram, 2nd Bn. 4th Bombay Grenadiers.
Major P. C. Craddock, R.A. (T.A.).
2nd Lieutenant F. O. Cêtre, The East Lancashire Regiment.
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2nd Lieutenant R. Stockwell, The Border Regiment.
Lieutenant J. L. Stewart, The King's Own Scottish Borderers.
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2nd Lieutenant Peter Young, General List (T.A.).
Lieutenant F. John Kemmis, R.A.O.C.
Lieutenant V. L. Barratt, The Royal Norfolk Regiment.
Lieutenant A. C. C. Brodie, The Black Watch.
Major The Earl of Caledon, late The Life Guards.
Lieutenant D. M. Geddes, M.C., The Queen's Own Cameron Highlanders.
Major M. E. S. Laws, M.C., Royal Artillery.
Captain M. R. Lonsdale, The North Staffordshire Regiment.
2nd Lieutenant A. P. Mitchell, The Duke of Wellington's Regiment.
Lieutenant R. M. Power, Royal Engineers.
Captain M. C. D. L. Reynolds, The Bedfordshire and Hertfordshire Regiment.
Lieut.-Colonel E. L. Roberts, M.C., E.D., The Madras and Southern Mahratta Railway Rifles, A.F. (I.).
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Captain H. J. Tedder, The Royal Warwickshire Regiment.
2nd Lieutenant R. J. E. Wilkins, 7th Bn. The Middlesex Regiment (T.A.).
Captain A. Boyce, The Hampshire Regiment.
Major J. E. King, The Buffs.
Captain J. A. M. Rice-Evans, The Royal Welch Fusiliers.

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"Res Judicata."
"The heavens with that we have in hand are angry."
"So many a thousand actions once afoot . . ."
"This fortress built by nature for herself . . ."
"Success through unity."
". . . Hell is empty."
"Unity in arm : diversity in function."
"Stultum est Timere Quod."
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Up-to-Date Information

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The Library has other sources of up-to-date information which may be of assistance to Members, particularly those who are engaged in special studies connected with Promotion Examinations or in preparation for the Staff Colleges.

Facilities for Borrowing Books

The special attention of Members who are paying the comprehensive annual subscription of £1 5s. od., is invited to the fact that they are thereby entitled to the full privileges of the Lending Library without further charge. These include the right to have sent to them not more than four volumes at a time on loan, the Member paying postage both ways.

Old Members who have not wished to conform to the new arrangement and who are still paying the original subscription of £1 1s. od., must pay an additional subscription of 10s. per annum in order to belong to the Lending Library.

All Members are, of course, free to use the Library when they visit the Institution.

Rules Governing Return of Books

The attention of Members is invited to the following Regulations governing the retention and return of books :—

(1) Certain books, for which there is a special demand, must not be retained longer than a fortnight after the date of receipt. A notice to this effect will be found in the book.

(2) In the United Kingdom.—Books must normally be returned within one month of the date of issue ; but the Librarian is authorized to make extensions of one month at a time on application by a Member, up to a maximum of three months from the date of issue, if the work is not required by another Member.

(3) Stations Abroad.—When books are sent to Members abroad the same rules apply as for the United Kingdom, except that " the date of receipt " is substituted for " the date of issue."

N.B.—IN VIEW OF THE INCREASING DEMAND FOR BOOKS FROM THE LENDING LIBRARY, IT IS ESSENTIAL IN THEIR OWN INTERESTS THAT MEMBERS SHOULD ADHERE STRICTLY TO THE RULES GOVERNING THE RETURN OF BOOKS. FAILURE TO DO SO IS CAUSING MUCH INCONVENIENCE AND INVOLVING THE INSTITUTION IN UNNECESSARY EXPENSE AND CLERICAL LABOUR.

Members' Book List

A list of books required by Members can be registered, and they will be advised as soon as each book is available. Alternatively a registration card can be supplied on request to enable Members to compile their own lists.

Books are only sent without previous advice by the express wish of the Member.

JOURNAL

Date of Publication

Although the JOURNAL is now published on the 25th January, April, July and October, the quarterly issues will continue to be known as the February, May, August and November numbers.

Members should notify any change of address not later than the 10th January, April, July and October in each respective quarter.

Notes for Guidance of Contributors

The Editor has been asked to publish some notes for the guidance of those who desire to offer contributions to the JOURNAL. The following are the principal points to which attention is invited :—

(1) Preference will be given to articles which assist in the " promotion and advancement of naval and military science and literature " in practical form, and which are written with an up-to-date and first-hand knowledge of the subject with which they deal.

(2) Historical articles should point some definite lesson for the present or future and not merely recapitulate accounts of episodes of the past.

(3) Articles of interest to students of war in all three Services are preferable to those of a highly technical nature or of such restricted interest that they could only appeal to a very limited number of our readers.

(4) As a general rule, articles should not exceed 3000 words in length. Apart from considerations of space, experience shows that the short article which makes its points concisely is more effective and more widely read than one of a long and rambling character.

(5) Contributions intended for the JOURNAL should be addressed to the Editor. They should be typed (double spacing), but short articles in legible manuscript can be accepted if a typewriter is not available.

(6) The Editor is authorized to obtain official sanction for the publication of articles written by serving officers; it must be clearly understood that nothing written by such officers can be accepted for the JOURNAL without this sanction being obtained. Army officers should obtain permission for articles to be submitted for publication from their C.Os.

(7) Except where contributors are good enough to offer articles without remuneration, this will be paid at the authorized rates.

(8) Attention is invited to the note on the first page of each JOURNAL regarding authors alone being responsible for their opinions; also to the notice at the head of " Correspondence."

February and May (1938) Journals

Owing to exceptionally heavy demands for the JOURNALS of February and May, 1938, the Institution's stock of those numbers is very low. Will any Member who has finished with his copies kindly return them. Postage will be defrayed if requested.

Orders for Supply

Subscribers are recommended to place orders for supply of the JOURNAL direct with the Royal United Service Institution, thereby obviating delay in delivery. A suitable order form can be provided on request.

MUSEUM

Special Exhibition

A Special exhibition depicting " Primitive Warfare " is now showing in the Crypt of the Museum, and will be continued over the Easter holidays. This contains weapons, shields, drums and other relics connected with native warfare. There are also pictures of famous campaigns in savage countries, including a selection from the Crookshank Collection.

Royal Naval Air Service

It is desired to make a small collection of particularly interesting and historical relics connected with the Royal Naval Air Service, and officers who may possess such relics are invited to contribute. Samples of the badges worn by the personnel would be particularly acceptable.

Additions

(9023) Panorama of the Coronation of King George VI.—Presented by Captain J. R. Abbey.

(9024) Trumpet taken from King Prempeh's Palace.—Presented by J. A. Newbury.

(9025) Officer's uniform, Montgomeryshire Yeomanry Cavalry, 1880.—Presented by Mrs. E. Bell.

(9026) Belt buckle, East Surrey Regiment.—Presented by the Regiment.

(9027) Shoulder belt plate, St. Clements Dane's Association; water-bottle, Royal Westminster Regiment of Volunteers, 1803.—Presented by Miss Dencer.

(9028) Water colour of a British trench in France, 1917.—Presented by A. Yakovleff.

(9029) Surgeon's amputating saw, used during the Zulu War, 1879.—Presented by Captain A. Jackson, R.A.M.C.

(9030) Head-dress, Leicestershire Yeomanry, 1860–73.—Presented by E. J. Martin.

(9031) Signed photograph of Captain R. F. Scott, R.N.—Presented by the executors of Captain W. Vansittart-Howard.

Attendance

The amounts taken for admission during October, September and October were as follows:—

£51 10s. 0d. in October.
£103 1s. 6d. in November.
£65 2s. 6d. in December.*

* Museum closed from 26th September to 17th October.

THE KING'S OWN REGIMENTAL MUSEUM.

The King's Own Regimental Museum has for disposal two Levee dress sashes and a Levee dress belt surplus to requirements. The Institution already has a number of these sashes and belts, but any Regimental Museum wishing to acquire them should communicate with the City Librarian and Curator, Public Library, Market Square, Lancaster.

PRIMITIVE WARFARE

DEFEAT OF THE ASHANTEES BY THE BRITISH FORCES UNDER LIEUT.-COLONEL W. SUTHERLAND, ON 11th JULY, 1824

From the Crookshank Collection in the Royal United Service Institution.

THE JOURNAL
of the
Royal United Service Institution

Vol. LXXXIV. FEBRUARY, 1939 No. 533.

[Authors alone are responsible for the contents of their respective Papers. All communications, except those for perusal by the Editor only, should be addressed to the Secretary, Royal United Service Institution.]

THE PROGRESS OF AIR RAID PRECAUTIONS

By C. W. G. EADY, Esq., C.B., C.M.G., Deputy Secretary of State, Home Office.

On Wednesday, 26th October, 1938.

AIR VICE-MARSHAL SIR PHILIP GAME, G.C.V.O., G.B.E., K.C.B., K.C.M.G., D.S.O., in the Chair.

THE CHAIRMAN, in introducing the Lecturer, said that Mr. Eady was the Deputy Secretary of State at the Home Office in charge of Air Raid Precautions.

LECTURE

WHEN the Institution did me the honour of inviting me to speak on the Progress of Air Raid Precautions it was one of those quiet fireside days of the English summer, and the most that I could hope for at that time was that such observations as I was able to make might arouse a certain mild interest of the kind with which the people of this country contemplate a contingency. Since that date, however, something has happened to make A.R.P. a very insistent reality touching the lives and safety of the civil population of this country in a way which no one can dispute. Therefore, to-day I am speaking about something which is horribly real. I am also speaking in the light of what has happened—and I can assure you that nothing that happened or did not happen was a surprise to the Home Office: we had no illusions about the state of preparedness of the civil population of this country to receive sudden air attack; we were not prepared; we had hardly begun to prepare. But you will also understand that in the volume of advice and criticism which we are daily receiving, and of which we hope and expect to receive some more this afternoon, it is very difficult to sort out the broad lines of policy from the defects of detail. I thought, therefore, that it might be most valuable

to an audience of this kind to go back a bit to see what it was we set out to do, why we chose that particular method, whether it failed altogether in the crisis, or whether it only failed through unpreparedness at that time and could be made to succeed if ever we have to face a similar situation.

THE PROBLEM

To begin with, we were given the hypothesis that, quite suddenly—that is to say, with a very short interval between the failure of diplomatic negotiations and such form of ultimatum as may be appropriate to the next war—air attacks might develop upon the civil population of this country. It is true that any government would hesitate up to the last moment to launch such attacks ; it is true that if they were launched, the fundamental decency which underlies the Services of all countries would make airmen hesitate deliberately to bomb ordinary defenceless civil people ; but it remains equally true that it is not wise, in a country like ours, to assume that that will not happen ; it is not wise to assume that a bomb directed at a military objective will necessarily hit that objective and nothing else. It may even be true that the objective which will develop quite quickly and insensibly as the real target will be the staunchness of the civil population, and that it will be at their hearts and their courage and not at their military bases that the bombs will in fact be directed. That may seem an intolerable hypothesis ; but it would be still more intolerable not to try to do what we can to meet it.

Two or three years ago, before the Act was passed, a start was made on A.R.P. by Wing Commander Hodsoll, who is my chief colleague and one of the greatest inspirers of our work. It was realized that we might be faced with a new type of air attack—gas attack, with gases like phosgene or with spreading, blistering gases like mustard gas. It may be that now, looking back, you may feel that we have exaggerated the gas risk. Perhaps ; but that risk is less, if indeed it be less, largely because of the preparations that this country has made against it. It is a fact that we are further ahead in the protection of the civil population against various types of gas than any other country in Europe, and if we have air attacks and gas is not used against the civil population, it will not be, as I think we have reason to know, that the gas was not there, but that it was not worth while. But everyone who has had the slightest experience of gas, seeing it or knowing about its effects, knows that there is no other form of attack which has such a curiously swift demoralizing effect both upon disciplined troops and, still more, upon the crowded people of an industrial city. It can crack the morale of people, not only because of the injury it does, not because of some of

its horrors—they are no greater than abdominal wounds—but because it is an impalpable thing, it is an unexpected thing ; you are caught up in it, you do not know how to meet it, or how to get out of it. So I offer no apology for the concentration in the early days of our teaching and of our work upon the measures of protection against gas. But, of course, we must not ignore the other equally grave dangers to which air attacks would expose the civil population.

The next part of the hypothesis that was given us was that these air attacks would be delivered with very little warning over wide tracts of territory, leaving behind them a trail of casualties and damage ; that they would be so frequent, both by day and night, that they would be almost continuous. The best defence against the air raider is to keep him out. It will, I hope, always be the best defence, because A.R.P. only comes in when the air raider has got over. Now picture not London alone, but any big industrial city, and try and imagine what happens to the buildings and the people and the life of such a place in such circumstances. Remember, too, you cannot expect the whole population of an important industrial city to go to ground at once if you want the production from that city to maintain your war effort. Somehow or other you have to try and find a way of enabling the essential parts of the productive life of the country to go on, not necessarily during the minutes when air raids are actually passing, but under air raid conditions.

When we sat down to consider what we should do to meet such a situation we produced seventeen points. They are in fact statutory regulations. I propose, with your permission, to read them to you, not because the language is particularly elegant, or that these are probably the sloppiest regulations that have been produced by any Government Department, not because we could not have written them better, but because there is a certain amount of flexibility and common sense to be left in air raid precautions, and we were not sure that we were the only persons who possessed that common sense. I want to quote them to you for the reason that very few people—and I do not wonder—have read them. When you see the scope of the duties that fall upon a local authority, and of the preparations themselves, you will understand why, in the nine months that elapsed between the passing of the Act and the crisis, it would not have been possible to have got this properly geared up :—

REGULATION 1. *The giving of instruction and advice to the public as to air raid precautions.* Well, we had that lesson in our own way in September.

2. *Arrangements for receiving information with respect to impending air raids, and for giving air raid warnings.* That is not an extremely

difficult piece of detailed organization—I use those words deliberately. It is not difficult to give public warnings if local authorities will use the resources to hand. There are very few industrial cities—and we are concerned mainly, of course, with those concentrations of population—which have not got factory hooters and sirens. You have got to link those up and to make sure that they are used only for giving air raid warnings in war time ; you have got to make sure of the time, of the " carry " of their accumulated sound, and whether there are any gaps between the sound of the warnings. You have got to link up the central warnings with the local warnings which the local authorities are responsible for giving. It may be a loosely worded regulation, but it is a simple idea to work out in practice.

3. *Arrangements for the collection and necessary distribution of information and reports of air raid casualties and damage and for the recording of such reports.* We should not be civil servants if we did not provide some statistics, even in air raids.

4. *The organization of services of Air Raid Wardens.* I shall speak in a moment or two at greater length on that fundamental service.

5. *Arrangements for dealing with casualties, including the organization of first aid parties, first aid posts, casualty clearing stations and ambulance services.*

6. *Arrangements for the clearance of debris from highways, streets and public places and for dealing with damaged or unsafe buildings and rescue of persons trapped therein.*

7. *Arrangements for the detection of poison gas.*

8. *Arrangements for the decontamination of highways, streets, public places and buildings affected by poison gas and anything therein requiring decontamination.*

9. *Arrangements for the repair of highways, streets, public places and sewers and for co-ordination between the authorities responsible for such repairs and public utility undertakings.*

10. *The recruiting and training of such personnel as may be required for the purposes of the scheme.*

11. *Arrangements for the protection of such premises as it will be essential to occupy and use in time of war for the maintenance of air raid precautions services.* That is what one might call the protection of the battle headquarters.

12. *Arrangements for the provision of such shelters for the protection of the public as may be necessary.*

13. *Arrangements for or in connection with the restriction and regulation of lighting in highways, streets and public places.*

14. *Arrangements for the distribution of respirators to the public upon directions being given by the Secretary of State in that behalf.*

15. *The storage and maintenance of equipment, appliances and material required for the purposes of the scheme.*

16. *Arrangements in connection with any transfer of the civilian population*—that is evacuation.

17. *Arrangements for the control and co-ordination in time of war of air raid general precautions services.*

Then on top of those seventeen points there is a shorter six-point set of regulations dealing with the fire brigade service.

RESPONSIBILITY OF LOCAL AUTHORITIES

At first sight a document of that kind may seem bewildering. How is a start to be made? Who is to do it? What resources are there available? We were setting out to do a very difficult thing. Neither we, nor any small group of persons like the local authorities could protect the civil population unless the civil population were prepared to take a very full share in their own protection. We saw the job as one where much of the work was absolutely local. Owing to the limitations of time and of cost we wanted to make the fullest use of existing resources which could be adapted for war-time purposes without forcing a complete disruption of peace-time life. We wanted also, because time might be short, to take over, if we could, or to apply to this job, a going concern. We had also something vaguer and bigger, but not less real, behind all that; for when the Home Secretary issued these regulations he saw the Press and he said to them something that struck their imagination, because it reappeared in a number of the leaders of next day. He said that the duty of organizing air raid precautions had been put upon local authorities as the democratic representatives of the citizens of each place. There are reasons which I shall explain in a moment or two why I think that was the right principle, and why, in spite of certain obvious difficulties and defects, it is the principle which will probably be adhered to. Something more was at stake than just the choice of the most efficient instrument at that time. Two ways of doing things are battling in the world, and I think perhaps we are right, if we can make it work, to try and make our way of doing things work. It is a test whether our way of doing things will work. If it will not work, we may have to modify that way rather drastically; but it would have been impossible at that time to create any new kind of centralized institution such as, perhaps, on a superficial view, may appear to be one of the lessons to be derived from what happened to A.R.P. in the crisis.

Next let us consider the question of time in relation to the choice of the instrument. When you are dealing with factory sirens and hooters,

with buildings which are going to be improvised as first aid posts, with rescue parties to bring people out of damaged buildings, with the decontamination squads who are going to be trained to deal with areas and buildings which have been affected by gas, when you are dealing with a whole number of things that are in these regulations, you have an apparatus partly to hand in the various departments of an ordinary, reasonably large, reasonably well organized industrial city. It is true that no part of that apparatus, or any large part, has been used for this kind of thing; but it exists. There are engineers, there are surveyors, there are medical officers of health, there are schools which can be improvised for A.R.P. buildings; there is a whole wealth of apparatus; and whatever organizing institution locally we had created, we should have had to make use of the apparatus which is possessed by the local authorities. It was natural to proceed through the local authorities in their full constitutional sense. But the resources of the local authorities were clearly not sufficient. We needed a very large additional peace-time army prepared to do peace-time training, prepared to serve in war-time on these duties; and we set out to make appeals to ordinary people to fit themselves for these jobs. It is not a very elaborate training that is required; in fact, in some respects the training that is given is not the training that is really required. It is necessarily, at the initial stage, to some extent rather theoretical, to some extent rather in the nature of lectures and examinations. It was proceeding, would have proceeded, steadily towards the essential part of the training—the exercises—as soon as the personnel had been fairly well filled up in the local areas. It is very difficult for those of us who live and work in London to see how A.R.P. can work; we see so little of it, and what we do see are only little bits of detail. We see some things which are successful, some things which are obviously deficient; but, unfortunately, there is no complete system for anybody who lives and works in London to see. There are complete systems in some of the smaller residential places outside London; and in eight or nine of the biggest industrial cities in this country you could have seen before the crisis, and you could have seen during the crisis, an almost complete organization swinging over to most effective work with very little hitch. Speaking generally, the scheme was not absolutely complete in personnel; it might not have stood up to what would have happened if the crisis had deepened into war, but it was there. Everybody who was in those services was conscious of what part he had to play; and, what is much more important, he was conscious of the part that he and his bit of the organization would play in relation to the whole. You will, I hope, have a chance within the next few weeks of seeing a complete film of A.R.P. at work—not just crisis snapshots, but A.R.P. work—and you will have,

I think, some assurance that there is something there which can be effective if it is properly organized.

For nine months we were haunted in some places by the problem of recruiting. We were not getting the response from the types of people we wanted. May I say this, and I say it without any intention of being offensive, but it is a fact and it may as well be said before this audience—the people who are sometimes known as the " governing classes " of this country have, broadly speaking, done little to help local authorities with A.R.P. It has been a serious thing that A.R.P. has had to be organized largely by the officials of local authorities, that most of the personnel are the industrial workpeople of the country, that the N.C.Os, the Group Wardens, and so on, are what used to be called the artisans ; but very few of the local residents in business and industry who might have helped to clear up a tangle, who might have brought great personal competence to help overdriven authorities, who might have brought the gift of personal leadership, came forward until it was very late indeed. Perhaps I, as a Government servant, have no right to say that ; but I am not the only person who feels it ; and if we are going to make anything of this service for the protection of the civil population there is no group in the country, and certainly not a group of all that power and gifts and experience, which can afford to treat this thing as though it were just one of those uncomfortable bits of local controversial politics. It is not. It has been, and will be again, in the municipal elections ; but behind that it is a problem of local organization which challenges everybody in any community he lives in.[1]

Air Raid Wardens

When we began to specialize in these services we had the problem of the Warden, and here again we took stock of the resources that a local community already possesses in the way of a disciplined force capable of dealing with trouble. You, Mr. Chairman, know better than any person in this room that, when anybody is in trouble, the first person he goes to (except when it is motor-car trouble) is a policeman ; and in the provinces—because it has been possible for the police to do it—it is largely, though not, of course, exclusively, the Chief Constables who have been responsible for the creation of an effective Warden service. This has not been only in their capacity as policemen—everybody has a proper respect for policemen as such—but also because something of

[1] Retired officers, who form an appreciable section of the community to whom the Lecturer refers, labour under the difficulty that in very many cases they have not been told whether they will be required by their old Services or whether they are free to take up other national work.—Editor.

personality, of discipline, of order attaches to the best of policemen; and that is what the Chief Constables brought into a service which necessarily suffers from a certain amateurishness, a certain disorder, and a certain lack of discipline, at any rate in the initial stages. Up to the present it has not proved possible to add to the enormous burden of the Commissioner of Police in London or of the London police the organization of Air Raid Wardens. Some such force as Air Raid Wardens is required, or so we judged if we were right about what might happen.

There were two sides to what might happen. First, the actual thing itself—the fire, the gas bomb, the high explosive bomb, the damaged buildings: those were the things on which you have got to get action taken quickly, and that is why the Air Raid Warden has, amongst his most important functions, the duty of being a patrol and a reporting agent. But behind that, and it is perhaps the gravest danger of air raids, lie the anxiety and terror and panic of nervous people when they hear explosions and noises and imagine what is happening, or get caught up in a wave of terror which is sweeping over very large numbers. It is here that experience of handling men and women comes in; if a tendency to lose control can be checked at once or confined to a fairly small group, it will stop it developing into a general panic. So this is what the official document says about the Warden: "The Air Raid Warden is chosen as a responsible and reliable member of the public who will undertake to advise and help his fellow-citizens in the sector to which he is allotted in all the risks and calamities which might follow from air attack, and will form a link between them and the authorities for reporting air raid damage and calling aid when required." Then I think the ladies present are entitled to hear the next paragraph: "Although, for simplicity, this book speaks of a Warden as 'he' and 'him,' women can well perform the duties, and it is hoped that many Wardens will be women. The Warden is not a policeman, nor a special constable. He can, however, by his example and his readiness to help, exercise a powerful influence in time of stress." Then it goes on to describe the specific duties and training of a Warden, but they are all more or less specialized bits of that one requisite—that he should be the steadying influence, the man who is prepared to get to know the people, to let them get to know him, to be a person to whom they can look up, and to be prepared to face a good many personal risks and a great deal of personal inconvenience in war-time in order to help those people in his sector into safety, or to get them help and succour if calamity has overtaken them. But we are not getting, and we have not got, anything like the number of Wardens we want, nor have we got in all cases the type of Warden we want. That is not entirely the fault of the people. I do not think we may have always been very wise or

very skilful, and perhaps not very intelligible, in the appeal that we have made to the masses of people in this country about A.R.P., and we have got to straighten that out. It is one of the things we have learnt from the lessons of the crisis.

First Aid Services

As I say, the Warden is there primarily to try and prevent casualties ; but it is understood that casualties will happen, and there is not in existence to-day in any city a casualty service that is at all adequate—it cannot be—to deal with the number of casualties that might quite easily occur in any one raid. Here again we try to sub-divide the job and to get it down to the small group, and we have our first aid parties, who ought, I think, properly to be called Stretcher-Bearers, for a very interesting reason : we are finding it extraordinarily difficult to recruit first aid parties ; people think of it as a very soft job, and in the industrial areas you cannot get the men of courage to join them. As a matter of fact, there is not likely to be anybody in this room who would underestimate what is going to be required of stretcher-bearers in the event of air attacks on big industrial cities ; and I believe that when it has been said quite frankly and openly that these first aid parties, instead of having a soft job, may be engaged on work as dangerous as any in the country, we shall not find any difficulty in getting men ; but perhaps we have never said that openly enough.

Then there is the matter of first aid posts. A first aid post has to perform a dual service. In the first place, it is a post, not a hospital. It needs a fairly experienced staff—an experienced V.A.D. in charge of first aid personnel, who will deal with cases which have got contaminated by gas, light gas cases and light abrasions and surface wounds, and so on, which ought not to go to the hospitals because they would be crowding out places which will be required for much more serious casualties. I think possibly we made a mistake in thinking that our first aid posts had better not have a doctor in charge of them. We did that for two reasons—in the first place because we were not sure whether there would be enough doctors to man these posts, to deal with the ordinary civil requirements of the civil population, and to staff the casualty hospitals ; and secondly, for a reason which I will give in the words of one of the most distinguished surgeons in the country : " if a doctor is in a first aid post and he has a penknife and some methylated spirit he will operate " ; but we had not planned the first aid posts, either in personnel or in equipment, for operations. If we find, on looking back at all we learnt in the crisis, that we must be prepared for a sort of casualty dressing station in the first aid post, and that we had better have a doctor, we will have him.

The next part of the first aid service is the ambulance service. Here again, there are nothing like enough ambulances, and there is no reason why there should be so many in peace-time; but, in war, we have got to have a lot more, and, we shall have to requisition commercial vehicles and fit them into emergency ambulances. As a matter of fact, we were able to do one or two remarkable things in the crisis. The Green Line omnibuses would have disappeared—in fact, they did; and they would have been ready—the whole four hundred—as emergency ambulances. That is only improvization, but that is the way you have got to approach a good deal of A.R.P. work in war-time. You count your blessings in peace-time and see what you can do with them in war-time. You cannot have a war-time service of this size completely mobilized in peace-time if you want to maintain a balanced order in your peace-time life.

Then there are the hospitals. I am not going to speak to you about them at length. It was an ingenious system which the Ministry of Health, with the help of medical men, had worked out, and if the transport had worked smoothly I think it would have been something that would have stood up, at any rate at the beginning, to the tests to which it would have been exposed.

Rescue Parties

Next we come to the rescue party. The rescue party is rather difficult to train in peace-time. It is essentially a party of men accustomed to the demolition of buildings, who will go out and rescue casualties. When we had a trial of rescue party work in London, we naturally arranged a casualty under debris; but we took the precaution of making the casualty of straw. The first rescue party put a pick straight through his stomach, and the second party broke his head off his neck while they were pulling him out. It is extraordinarily difficult to train rescue parties and ambulances except with what you might say are real living casualties, and there is no provision for a supply of casualties for A.R.P. training in peace-time. But the rescue party can be trained, and have learnt to do very remarkable work. The men are builders' men as a rule, and one of the things they had never appreciated until they came to do this work was that when you are clearing debris from a casualty you have got to clear it brick by brick, probably by hand. It was a great shock to the foremen when they realized that they must lift debris brick by brick off casualties; it struck them as being uneconomic. It may be; but it is rather better for the casualty. It is quite likely that as we digest the lessons of the crisis and of our experience in the last few months we shall split these rescue parties into

two sections: the first might be called light parties, who would work in a Warden Group—that is to say, a block of houses representing about six thousand inhabitants—they would be equipped with light apparatus for dealing with small incendiary bombs, and possibly with some knowledge of first aid; the other would be "heavy parties," who would work from a limited number of depots and have apparatus for clearing away beams and cutting through steel girders, and so on. That, again, is not technically a very difficult problem, but it is another problem of organization.

There are other services, but I am not going to deal with them in detail, because I want to emphasize the second biggest fact of all that appeared in the crisis. A.R.P. is not a mystery. I think it has been our own fault that we may have made it appear too much of a science; it has been linked up with too much technical stuff about gas and decontamination and a lot of new business like that, and it has puzzled people. It is not a mystery. It is essentially a matter of sub-division of quite simple things, and it requires not so much technical knowledge as organizing capacity, and I believe it is easier to find technical knowledge than organizing ability.

CO-ORDINATION

The last regulation of all is one which is going to prove one of the most important—the regulation requiring an authority to include in its schemes measures for their co-ordination—"Arrangements for the control and co-ordination in time of war of air-raid general precautions services." Now, local authorities are very remarkable institutions, and they are very precise about where their boundaries end and where the next man's boundaries begin; but, of course, an aeroplane, and especially a foreign aeroplane, which has not been brought up in the great tradition of English local government, is not so sensitive about these juridical niceties; and if, as in my own residential borough, there are no builders' labourers who can form rescue parties, I do not see why it should not be helped by the borough down at the other end of the road. Yet under the normal peace-time organization it would be quite a difficult thing to persuade my borough to make use of rescue parties from the next borough, and infinitely more difficult to persuade the next borough to use rescue parties, which it had trained, to rescue me from a district where I was not a ratepayer. That is rather a flippant way of putting a very real difficulty. If we are to proceed by local government, as I think we ought, it must be realized that in war those local government boundaries will have to be ignored and we shall have to make people understand that they must pool their resources, and that it is quite

likely that somebody a little higher up than just the borough authority will have to direct those resources.

We at the Home Office do not take any great credit for the rather dramatic, or even melodramatic, digging of trenches that took place in London during the crisis week; but that was organized centrally at the Home Office for the boroughs by the public works contractors of London. The contractors were called together, and we studied a map of the open spaces in each borough; we had not very much time; we sited trenches in what seemed to us a reasonable siting, and we gave each contractor a map of the borough to which he was allocated. We had not even got a spare map to tell the borough surveyor where the trenches were. We sent to the borough engineer a copy of the instructions we had given all the contractors, we asked them to meet together the next morning and get on with the job. In many cases they met that night and got to work at once. It is such emergency measures as these that must be worked out in very great detail in peace-time, because the most difficult phase in providing air raid precautions and in mobilizing the civil population is that of transition from peace to war. It is then that confusion is likely to arise; it is then that there may be hesitation or arguments about who is going to pay. Quite recently a farm was burnt because there was a slight difference of opinion between three fire brigades as to why they should go to an area which had no fire brigade at all. It is those sort of things which in peace-time have got to be provided for.

EVACUATION

One of the most anxious problems in connection with A.R.P. is the evacuation scheme of the civil population. Now, Heaven forbid that anybody should believe, especially at the Home Office, that the emergency scheme during the crisis was the best that we could do. It was not. If we had been given a little more time we could have done rather better than that. What we were faced with was that in a matter of just about two and a half days we had to produce a transport scheme and a billeting scheme, or rather a first-night sleeping scheme, which would stand up to a whole number of changing conditions and evacuate very large numbers of children, and possibly a very large number of panic-stricken people, out of London at very short notice. It had every defect of detail that anybody could imagine, and many more even than some of the people in this audience know about; but let me say this: if we had been told to move those half-million children at 9 o'clock on that Friday morning, Mr. Pick, of the Transport Board, and the railway companies would have got them all out that night, and we knew that somehow or other, for that night and possibly the next night, every one

of those children would have slept warm. I am not saying that because the organization was ideal, or because at that moment, under those conditions, as we know, there were people prepared to sleep on the floor so that the children could sleep in their beds: you cannot organize on that assumption; you may get it for just a night or two; but something so fine came out of the response in the home counties and the counties near London on that Thursday and Friday that, although now, in retrospect, we see the details that were wrong, and I believe there would have been every kind of misfit and so on, yet I do not think we ought to forget what was in fact offered to us on that Thursday and Friday. It was one of the finest things that, in my experience of the public services, has happened. But that is no excuse for trading in future on people's willingness to do those things at the cost of grave personal inconvenience, real discomfort, and serious misunderstandings. We have got to get a much tidier scheme. I do not want you to think that that was an evacuation scheme; it was an emergency scheme for getting refugees out of London and bedding them down that night while we tried to sort out what was going to happen afterwards; and it would just about, and only just about, have stood up to those requirements.[1]

THE FUTURE

Now, what is the ultimate lesson that has come out of the experience of A.R.P. in the preparation and in the crisis? We know that the organization may not be 100 per cent. in all places in peace-time, but we know that it is going to be well up to 75 per cent. or 80 per cent.—on one condition: that leadership emerges in peace-time. It is a most remarkable thing that, at the last moment, leadership sprang up all over the place. People came in at the last moment and helped the local authorities and their hard-driven staffs to pull it through. In the best areas the leadership had been there already; it was there in the local authority and it was there in the local authority's officials, in the Chief Constables; and it made something of the job. It is not "high-falutin" qualities of leadership that one is looking for; it is the leadership which is prepared to give up a bit of time in the evening to go to training, which is prepared to provide experience and skill to get the administrative side organized, which is prepared to help in creating a spirit among the people who have joined that it is a force with its own *esprit de corps*, with no *panache*, no flags, no uniform, only a rather grim duty to fulfil if the need came—just that kind of leadership which there is all over the place, but which

[1] Since this lecture was delivered, evacuation has been made the responsibility of the Ministry of Health and an Evacuation Division has been set up within that Department. Attention is being devoted first to a scheme for the evacuation of school children.—EDITOR.

people always show rather late. I think there are certain details of Air Raid Precautions—some very important details—which will have to be amended, and that there will have to be certain extensions of power; but I do not think that the fundamentals are wrong. I think that if we were to attempt to create a new institution in each locality, or each council, to organize this service, we should still come back to the fundamental fact that it is not really a question of institutions or of local authorities; it is a question of the quality of the people who come forward to lead and organize, and the time they will give.

I believe that when the moment comes for the Home Secretary, in Parliament next month, to sum up the lessons of Air Raid Precautions, and make a statement on the future policy of the Home Office and the Government, and when, as I hope, he calls on the people of this country to give their services to an organization which in the early days of a war is going to be of the highest national importance, there will be no failure of response to that call.

DISCUSSION

General Sir George Jeffreys: I venture to speak from the angle of the Chairman of the Hampshire County Air Raid Committee, and it is only from that angle that I shall make any remarks. I admit that I expected from the Lecturer a little more of a confession of non-success in Air Raid Precautions and the arrangements that were taken at the time of the crisis. No doubt many mistakes were made—they were bound to be made—in localities, in districts, in counties, in boroughs, yet I think that a good many of the mistakes that occurred were mistakes of omission and mistakes of lack of organization on the part of the Home Office.

This is just a Defence matter—air raid precautions are passive defence; but none the less defence. It is not a civilian matter at all, and the head of that department in the Home Office ought to be a senior and distinguished and able officer of one of the Services. I believe that if that had been the case we should have had a better appreciation of the task before us, and a better organization. One of the things of which we complain is that, on the whole, we have had a lack of guidance, and that the Home Office has apparently regarded the whole problem as one and indivisible for the whole of the country whereas, actually, while there is intense danger in certain localities there is very little danger in others, and it is in those dangerous localities that we ought to concentrate our greatest efforts; I do not think that has always been done.

So far as my county is concerned, I must differ from the Lecturer as to the non-participation of the governing classes. I can say without fear of contradiction that in the non-urban areas—and the governing classes, as I understand them, do not live in the urban areas—and in those areas, where the governing classes have taken it on there has been a far greater response on the part of the people in general, and far greater efficiency than there has been in those more democratic areas where the governing classes do not exist, and consequently do not take part.

I venture to think that the organization was not started in the right way. It started by a mass of literature and instructions being broadcast to every district,

urban and rural, and there was no discrimination as to whether they were important districts or as to whether they were unimportant districts. Then at a later date the counties were superimposed over the districts, but there is still a certain amount of direct correspondence on certain subjects with the districts over the heads of the counties. I think that is unsound. I think there should be one channel of communication and orders, and that should be through the counties to the districts. Next, there is divided responsibility in the Home Office, I believe I am right in saying—at any rate, there appears to be—for the various branches of A.R.P. The A.R.P. Department proper deals, I believe, with organization, with anti-gas, with shelters and with A.R.P. generally ; but dealing with fires is in the hands of the Fire Brigade Department. When the Lecturer said that A.R.P. was no mystery I think he had not got the Fire Brigade Department in his mind, because they regard fire as a mystery with which no lay mind should have anything do do. We are told that it is no business of ours, but the Fire Brigade Department at the Home Office has done nothing, so far as our county is concerned, to help us in the smallest degree, but has, on the contrary, appeared to us, perhaps unwittingly, to be definitely obstructive. I think probably they do not understand the methods by which fire brigades are organized in a country district. Most districts have not got their own fire brigades, rightly or wrongly, but they subsidise another district for the services of the fire brigade. That brigade is probably very jealous, and does not wish the representatives of an adjoining district to see anything of their fire-fighting arrangements, or to interfere, and the result is that nothing is done.

Another point is first aid. I am quite sure that that is one of the very weakest links in the chain. Nominally and theoretically, first aid is under the county medical officer and his assistants. Actually the county medical officer has far too much to do in his normal business to attend to first aid, and consequently it does not get the attention or the organization that it ought to get. I believe that that is another point which ought to receive further attention. Unless I am mistaken, the Ministry of Health has some finger in the pie, at any rate, in first aid, and a big finger in the pie in hospital arrangements.

Lastly, on this question of evacuation and billeting. Apart from the arrangements for children, which I think would temporarily have gone all right, billeting, so far as my county is concerned, would have resulted in absolute chaos ; what was almost worse than the method by which it was to be carried out was the way in which arrangements were made for dealing with it by the Home Office. That took the form of a confidential letter to the Clerk of our County Council, who was ordered to assemble the clerks of local authorities. The latter were to appoint billeting officers and make billeting arrangements, but this was to be disclosed to nobody, not even to their councils, not even the chairmen of their councils. If there is one way of securing the certain opposition of the public it is to keep a thing like that absolutely and completely secret, and to try and run it over the heads of all the people who could make it a successful going concern, and who could assist in the matter and who do represent the public in their neighbourhoods.

One more point : the letter which was issued, presumably as a matter of urgency, by the Home Office, ordering the assembly and the distribution of respirators and advising the construction of trenches was issued and posted to us in the Home Office on Saturday, 24th September. It was addressed to " The Clerk of the County Council." It was not marked " Immediate," nor was it even marked "Air Raid Precautions," there was nothing to distinguish it from the large mass of letters that go into the office of a big county council every day. It was delivered on Monday morning in the ordinary course of post, it was sorted, among some hundreds of letters,

by the subordinates of the Clerk to the council, and it was nearly mid-day before it was opened and passed to the Air Raid Precautions department. The Lecturer has reminded us that the notice will be very, very short, yet through no fault of anybody, except the Home Office, it took forty-eight hours to reach the parties concerned; and the signature at the foot of that letter was his own!

WING-COMMANDER CAVE-BROWN-CAVE: I can speak with fairly intimate knowledge of the way in which this scheme worked out for a town of some two thousand inhabitants and one very likely to be attacked. There was no general shortage of volunteers for Wardens' duties, but, although in certain parts of the town it was possible to assign six Wardens to a post, in the lower part of the town near the docks there was a great shortage. This was due, partly because the instructions lay down that men should be employed close to their own homes, and partly because married men are not anxious to go far from their families for which they feel direct responsibility. The solution of this difficulty lies in taking young men who are not responsible for families and who would be prepared to go to some distance in order to do useful work. No doubt these young men might ultimately be taken for other service, but they would perform valuable work in preparing the system and in getting over the first fortnight of war.

We devoted great attention to the establishment of five Report Centres and one General Headquarters. Each was in charge of two men Controllers. The whole of the remaining personnel were women. The majority of these had been thoroughly trained and the system worked most satisfactorily. Two watches for each Report Centre were trained and would have remained on duty from 8 p.m. to 8 a.m. on alternate nights, arrangements having been made for them to sleep near the Report Centres and be called immediately when required. Provision for day time was made at the last moment by training a number of Secondary School boys and girls who would have been capable of doing the duty from 8 a.m. to 2 p.m. and 2 p.m. to 8 p.m. every day, thereby relieving the adult watches from all day work.

A system in which the Wardens are dependent upon being able to summon assistance from parties organized as at present arranged must necessarily depend completely upon a satisfactory system of communications. Whether these Centres will also be able to supply Mr. Eady with the statistics for which, as a good Civil Servant, he longs, I am very doubtful. Such statistics, if they are to be of any value, must be collected after a raid has passed.

One of our outstanding conclusions is that the number of Police available must be enormously increased. The Warden cannot do police duties. He has not the experience or the authority and will be more than fully occupied with his own job.

A point of great general importance is the difficulty of building up an organization of this magnitude and importance upon a wholly voluntary basis. It has been comparatively easy to maintain interest during the early stages when we were working with a few real enthusiasts and at the time of the recent crisis, but to develop the scheme to a state of continued reliability and efficiency over a period of some years which may elapse before another serious crisis arises, is going to be exceptionally difficult if we are entirely dependent upon voluntary personnel. It seems essential that there should be a nucleus of persons who have undergone definite training and passed a definite test in all their duties, who have maintained a minimum number of practices in each year, and who are under some definite obligation to be available for A.R.P. duties in emergency. In exchange for this training and obligation it seems reasonable to make some grant or payment. One of the great inducements to a person who is dependent upon paid work would be an undertaking that in the event of war A.R.P. work on a paid basis would certainly be available.

I should like to draw attention to the extent to which a local authority is dependent upon Inspectors. It is difficult for those at Headquarters to realize how little local authorities know of the real conditions which would apply in an air raid. The A.R.P. Officer knows a good deal about such matters but his local Council knows extremely little. They know so little that it is very difficult for the A.R.P. Officer to get what he wants and to make his Council realize what is reasonable. The most important function of Inspectors is to collate experience by attending exercises carried out by local authorities and to pass on their experience to others. It may be contended that many Inspectors have at the present time little more knowledge of A.R.P. matters than have some of the local A.R.P. Officers, but the position of the Inspector is such that he can accumulate experience very rapidly and can pass it on with considerable insistence. Inspectors are, I think, much too inclined to be appreciative and generally encouraging. They should, I think, concentrate much more on recommending improvement and seeing that it is in fact carried out.

The Government finds some 80 per cent. of the cost of the work. They must, I think, realize that they will also have to supply some 80 per cent. of the technical knowledge and experience.

The Home Office has, in my opinion, set up an organization which does give good protection against the consequences of air raid action, but they have tended to unload this responsibility on to the local authorities to a much greater extent than those authorities are capable of bearing. It is fundamentally unsound for anyone to unload responsibility on to another until he is satisfied that it will be satisfactorily borne.

The Home Office may claim that Parliament has passed an Act which leaves the responsibility upon the local authority, but after all, such an arrangement was drafted by the Home Office.

WING-COMMANDER E. H. SPARLING: From my point of view, in the county of Essex, I do not agree with the first speaker about getting no help from the Home Office. I do not consider that there is too much literature issued from the Home Office, but what I do consider is that the people who have to read it in many cases are not competent to understand it. As he mentioned, there is not a direct channel of communication. In our county we have areas combined under a joint committee; communications go to the Clerk of the rural or urban council, as the case may be; they read these communications, but not the answers of the committee who are dealing with the subject, and they get false ideas from these communications and come to wrong conclusions and upset the work of the Air Raid Precautions Officer.

I very much regret that the Lecturer did not refer to this officer. He is a new officer in local government; he is not recognized by anybody; in no communication of any sort is an Air Raid Precautions Officer ever mentioned in any Home Office publication. I am one of the lucky ones. My appointment at the Essex County Council, I was told by the Chairman of our Council last week, is probably a permanent one, but the majority are on a month's notice, or for a year, at the pleasure of the Council. The latter hope that when he has drawn up the necessary scheme they will be able to say "Good morning" to him; but those of us who work on these precautions cannot see how anybody but an Air Raid Precautions Officer can keep alive and keep working what is nothing more or less than a mobilization scheme.

I agree with the Lecturer in what he said about the leisured classes. In the parts of the county where I expected those classes to come forward they have not done so. It has been remarkable that the artisan class are the only people who have volunteered. In a very big city of 60,000 inhabitants in the northern part of my

county practically none of the leisured classes have come forward to help in the organization and the higher work which is wanted in connection with air raid precautions.

There are difficulties about this decentralization, and I do not agree that local government is the suitable body for organizing air raid precautions. In a borough of 70,000 inhabitants, such as I have got in my county, I do not see how the medical side of air raid precautions can be organized by a medical officer who is only part-time. I quite agree with what the first speaker said about fire. How can fire be co-ordinated when there is no co-ordinating head? Air raid general precautions have to be co-ordinated by the county, but the county is not concerned, and I have nothing to do with fire precautions. Who is going to co-ordinate them? The Act piously hopes that arrangements may be made; but I doubt it very much when I am told by one of my urban districts, "Our fire engine does not go across the boundary; they have not paid the rates."

I found during the crisis that one of the most difficult questions is that of the heads of our services—Superintendents of Air Raid Posts and so on. They are the people who, in time of crisis, we badly need to help to organize; but they are not available, they have got their ordinary work to do, and we cannot say to them if you do come you will get paid for the time lost in your ordinary work.

I agree entirely about the headquarters for keeping a scheme alive. Unless and until every precautions headquarters in every single district has a place on the lines of a Territorial headquarters or drill hall, not only where people can be trained but where they can also have a sort of social club, and unless A.R.P. headquarters are improved, you will not keep the organization going. In several districts in our county a broken-down room over a shop is considered quite good enough for the Air Raid Precautions Officer. I am very doubtful whether the voluntary system will work satisfactorily., At the time of the crisis volunteers came forward in their thousands, but not one of them was any use to A.R.P.; they had never been trained, they did not know where to go.

I would like very much to see a proper channel of communication such as we have in the Services. At present it goes over the heads of the County Council straight to a Rural Council or an Urban Council, although the County Council is the scheme-making authority. During the crisis, instructions went out to people who had no authority to take action. Until there is a proper channel of communication and some authority who can over-ride local authorities if necessary, more responsibility ought to be taken by the Home Office in my opinion.

LORD MERSEY: As Chairman of a Bench of Westminster magistrates and as a director of two public utility companies which employ about 50,000 workers, I wish to ask three questions. The first is, whom do you want to evacuate? Do you want to get everybody possible out of London, or do you want to get out of London only the people who have got nothing to do?

The second question is, what arrangements are being made to avoid duplication? For instance, a man who is in the Territorial Army is possibly a key man in a public utility company, and he may also have taken on the job of an Air Warden. Are you taking some means to preclude such confusion arising?

The third question is a minor one. I received in my house in Sussex about twenty children and half-a-dozen nurses. They were extremely clean, civil, and well-organized, and I should be very glad to have them again if need occurred; but I hear of instances where they were verminous and very naturally, if no means are taken (and I quite understand the difficulty of taking means at short notice) to

obviate that sort of thing, you will not encourage residents in the country to lend their houses for such people.

VICE-ADMIRAL GORDON CAMPBELL: The Lecturer referred to the shortage of Air Raid Wardens and personnel. There are many like myself who are on the retired list and therefore liable to be called up. On the other hand, we might not be called up for perhaps two years of a war. Now, I do not feel justified in volunteering as an Air Raid Warden and taking on a district if I might suddenly get a telegram from the Admiralty ordering me to go to Timbuctoo.

I suggest to the Lecturer that the only solution to his problem of Air Raid Wardens and other personnel is to have national service.

VICE-ADMIRAL G. O. STEPHENSON: I will confine my remarks to evacuation. The Lecturer seemed rather proud of that scheme and how smoothly it went through. I should like to ask him why these plans were not made out until about twenty-four hours before they had to be carried out. I presume the Home Office knew the dangerous position of the country, why did they not make their plans in sufficient time for them to be known to the people who would have to execute them; and why were communications on the subject, when they did come, marked "Secret."

I am one of those unfortunates who live in a county which is dubbed a safe area—about forty miles from here. Can the Lecturer tell us why they encouraged local authorities to get all the local people to volunteer and train for certain work and then, when the time came when they would be wanted, they were all required at home to get their house going, so that they would have been unavailable? Secondly, could he tell us whether the householder has any authority whatever over the visitors in his house, whether he can tell them to do any part of that household work that he has not got an adequate number of servants to do, and whether, in the event of illness or some other little trouble such as the last speaker mentioned, he has any authority to deal with it, and whether he has any authority to buy beds and bedding necessary for these people.

Has the Home Office thought of the chaos which would be produced in the country side by that unthought-out scheme being thrown on the homes—and it applies to the cottages exactly as it does to the bigger houses? Speaking from the point of view of myself and my friends, I am perfectly prepared to go and risk my life and the life of my family, and to come back and find my home wrecked by the enemy; but I am not prepared to find it wrecked by the Home Office!

COLONEL VAN STRAUBENZEE: Advocated sinking a shaft alongside each house with a gallery under it, in order to provide immediate shelters.

PAYMASTER-COMMANDER H. B. TUFFILL, R.N.R., expressed the view that Air Raid Precautions were essentially a civil matter and should, therefore, be dealt with by the Home Office executive—the Police.

He called attention to the huge number of people entering and leaving the city daily, and the congestion at vulnerable railway stations in the rush hours.

CAPTAIN W. H. CADMAN: As a commandant of one of the biggest central gas schools during the last war, and also an officer of the Special Brigade for Gas Services, the Royal Engineers, I feel that I am in a position to say something about the gas side of this question. I suggest to the Lecturer that the Home Office might make more use of the ex-officers and non-commissioned officers of the Special Brigade, of which there are well over a thousand. We have had first-hand experience, probably more than anyone else, in connection with active service in France and elsewhere.

My other suggestion is that every man, woman and child to whom a gas mask has been issued should be put through gas before those masks are returned. Let there be an opportunity by means of a travelling gas chamber, which is very simply arranged by local authorities. There is no danger in the tests at all, even if by any chance the gas mask should not be a perfect fit; there is no serious danger; it might be simply a little tear gas, which will only cause them to choke if it does get in; but which will give them absolute confidence in their masks. Everyone in the Army had to do it in the War, before they had confidence in their respirators.

THE LECTURER

In replying to the Discussion, the Lecturer said: I have made a careful note of all the suggestions that have been made, and I wish to assure you that we shall look into them; but there are one or two things that I would like to say on points which were raised or touched on by more than one speaker.

In the first place, I should like to assure Sir George Jeffreys that I had no intention at all of creating any impression of complacency about the crisis. I explained at the beginning that it was a pity to judge the fundamental conception of A.R.P., and the fundamental principles of its organization, by the state of preparation that was disclosed in the crisis.

I must apologize if inadvertently I said something which sounded more critical than it was meant to be when I referred to the "governing classes." In the big cities there are men in business of considerable standing who sometimes take part in local government and at other times do not. Those are the people, and their sons, from whom we might have hoped that some response to this civic duty of A.R.P. would have arisen; but I could show you from the recruiting details that they have not all so far taken their share. I certainly had not in my mind any idea of reflecting upon the people who organize, govern and control the counties, and in that sense I must express my regret for having used the phrase.

Two or three people have spoken about the trouble created by the secrecy of the instructions that went out during the crisis. It was not due to stupidity that those letters were marked "Secret"; it was not due to stupidity that they were addressed to the Clerk; and it was not even due to my personal stupidity that they were sent out on a Saturday night for delivery on the Monday morning. If you will look very closely at the chronology of that week, and at the relation between the dates of diplomatic negotiations and the dates of the major decisions which were taken by the Government, you will realize that, just as other major orders were given, according to some outside persons, rather late, so in matters affecting such very large numbers of the people as the mobilization for A.R.P. work, some of their instructions may have seemed late. That was not because we could not think of ways of getting the letters there earlier, but because that was the policy which the Government wished to adopt at that time.

Now, as I am unfortunately in charge of A.R.P., and as I unfortunately have also nominally under my charge the administration of fire brigades, and even of police, in relation to their war-time duties, Sir George Jeffreys will forgive me if I do not enter into a discussion as to whether I would be better substituted by a distinguished officer of wide military experience.

I would like to say something about Wing-Commander Cave-Browne-Cave's remarks, because he made two very important suggestions for immediate action. First of all he said that he believed that if we could put a bigger obligation on the A.R.P. personnel—the obligation of a contract of service which would give them

paid work in war-time—we would get round some of our difficulties in regard to recruitment. Let me assure him that that suggestion, put as he put it, is one which will be reviewed by the Government in connection with the general issues of national service. Then he made a very interesting point about the functions of the inspectorate. It is not, as my old friend Admiral Stephenson said (if I may still call him my old friend !), that the Home Office wants to shuffle out of its responsibilities. Parliament has put those responsibilities, not on the Home Office but on the local authorities—that is the statutory position ; but the statutory duty cannot be performed unless the Home Office, which is supposed to be—if I may use a phrase which I hope will not arouse derisive laughter—their general staff, sometimes pats the local authorities on the back. We had to pat them on the back, because we wanted them to get a move on ; but the time is coming when it will be possible to treat them slightly differently if necessary.

Lord Mersey asked three questions about evacuation, and other speakers criticized evacuation policy and plans very strongly—they evidently felt very strongly. All I ask you is to remember what I said about evacuation in the crisis. It was not a scheme ; it was an emergency measure prepared at very short notice. It is quite true, perhaps, that all this could have been prepared beforehand ; but in the state of the popular mind of this country we could not have written at the end of July or in August to County Councils asking them to prepare plans for the possible reception of a million or two people. In September, A.R.P. was handicapped in its major tasks by the very grave considerations of the effect that these big things have on popular emotion and popular feeling, at very difficult moments. All I can assure those people who have criticized the evacuation principles, and who have even attributed to the Home Office a desire to wreck homes, is that I hope that when people have faced up to what the evacuation scheme would mean, not only from the point of view of the people who receive the refugees but from the point of view of the people whose lives might be intolerable in London and who have to be moved out for the sake of the war, we should get a sensible, acceptable scheme worked out. I believe it will be all to the good when Sir John Anderson's Report is published and there is a full discussion about the whole of this problem. Certainly we have no wish to shirk it, and no wish to ignore its lessons. It will not be possible, until that discussion has taken place, to give any kind of answer to the very serious and pertinent questions that Lord Mersey put. They are some of the things that have to be considered very carefully in connection with a proper evacuation policy.

Then as to personnel, and Admiral Campbell's difficulty about men who are under obligations to the Services ; we knew about that before ever the crisis came. The difficulties appeared clearly in the crisis and there is now a committee trying to avoid that sort of situation in the future. Certainly we have got to clear up the position of persons who are under some contingent obligation to the Services if we want them to do anything in A.R.P.

I must apologize if I have not answered all the questions that were put, or even commented on all the points ; but I am trying to pick those which, as I say, were touched on by more than one person. I feel a great deal of personal sympathy, if I may say so, with Wing-Commander Sparling and his comments about the difficulties of the Air Raid Precautions Officer. But in practice he consists of so many different people : in some parts of the country he is a person brought in by the local authority to help them through a difficult situation ; in other parts of the country he is the Town Clerk or the Clerk to the County Council ; or he may be the Chief Constable ; at the moment there is no single type of Air Raid Precautions Officer. One of the things the crisis taught us is that we shall have to encourage

the formation of a team of persons who are expert, and not only in A.R.P., but in handling local government, and give them some recognition. Whether we shall get quite to the stage of being able to communicate, whether secretly or publicly, our instructions to them instead of to the local authority whose servants they are, I am not so sure.

Now I come back to what I said at the beginning of this reply. I think perhaps I know as clearly as anybody can know, not all the things, but a very large number of the things which went wrong in the crisis week—not went wrong, but were shown up. I know the responsibilities of the Home Office; I do not want to minimize those. I also know something about the responsibilities of the local authorities, and, indeed, what I wanted to convey by my lecture was that I still believe—and if I did not believe it I should have no business to be lecturing here—that we can make out of the Air Raid Precautions Scheme, as we have it now, a real service. I wanted to put the fundamental conceptions of the service before you and ask you, with the enormous influence that an Institution of this kind has in affecting thought, to get as soon as possible to the next stage, beyond the criticism of details of the crisis—to the stage of how those failure as you have called them will be avoided next time.

THE CHAIRMAN

Mr. Eady has not followed the example of the animal which the Frenchman complained was dangerous because when attacked it defended itself. He has not attempted to defend himself or the Home Office. I can only say from my own personal knowledge that if he did he could put up a very good defence indeed.

May I just sum up by saying that I think one of the difficulties—and the discussion this afternoon has brought it home to me more than ever—is that a great many of us are still preparing for the last war, and not for the next one. Two speakers predicted what they called complete chaos in the districts to which people were evacuated from London. I dare say there may be complete chaos; but what—if we are thinking of the next war—is the alternative? Two or three million people liable to be blown to pieces in London. Personally I would much rather see complete chaos in the rural districts than I would hundreds of thousands of people killed in London. It goes much deeper than that, of course, because probably the main objective of intensive air attacks on London would be to destroy the will to resist of our population. Well, I think we have got a pretty good will to resist, but that is a possible thing to happen, and the more people you can move out of the real danger zone the less likely it is to happen.

Another thing I should like to mention is the question of personnel, which is at the bottom of the whole problem. It has been suggested this afternoon that if pay were promised on the outbreak of war that would solve the difficulties. Last May I asked for 10,000 Police "War Reservists." They were offered £3 a week if called up. Up till the third week of September something under 250 responded. In the fourth week of September 2500 came forward. But it was too late, for if the crisis had come down on us they would have been completely untrained. We have got to remember that this air attack, if it ever comes off, comes at once, and, however much men are ready to come forward at the last moment and volunteer, they are not going to be much good. We have got to get them beforehand, and the more lead we can give to get people to come along now and train themselves beforehand, the better prepared we are going to be if the time ever comes. If we have to wait for men to join up when the whirlwind is upon us, they will not be of very much use.

The customary vote of thanks to the Lecturer and the Chairman were carried by acclamation.

NOTE

Appointment of a Minister of Civilian Defence

Five days after this Meeting took place, the Right Hon. Sir John Anderson, G.C.B., G.C.S.I., G.C.I.E., M.P., was appointed Lord Privy Seal, and on 2nd November, the Prime Minister announced in the House that the new Member of the Cabinet would be the Minister for Civil Defence. " In that capacity," he said, " he will have direct charge of Air Raid Precautions, and he will also be responsible, in consultation with the departments concerned, for determining arrangements for national voluntary service."

OFFICER RESERVES AND THE ORGANIZATION OF NATIONAL MAN-POWER

By " OBSERVER "

SERIOUS efforts are, at last, being made to organize the man-power of the nation for war and to register those who are already doing indispensable work and those who volunteer for duties which they would only be called upon to perform in time of emergency. It remains to be seen whether sufficient volunteers of suitable quality will be forthcoming to meet the latter requirements. Meanwhile there is a very considerable section of the community which is legally bound to come forward when called upon, which has been trained to war, and which can provide leadership and organizing ability, whether in connection with the expansion of H.M. fighting Services or, if not so required, in very many other forms of national service ; this is that large body of officers retired from the Navy and Army and, in less numbers, from the Royal Air Force.

The time seems particularly appropriate to take stock of the various classes of officer reserves, and to see just where and how this source of man-power could be rationalized and, what is no less important, made and kept ready and efficient to take up war duties at the shortest notice.

To begin with, it should be recognized that the calls on the nation's man-power in the next war will be very numerous and very varied, and the greatest need in the less organized and disciplined civilian services will be for men with powers of leadership.

It is essential, therefore, that the Service Departments should co-operate to the fullest possible extent with the other Government Departments controlling man-power, especially in regard to the allocation of personnel which is already war trained. The aftermath of the Great War has left the Navy and Army with an unprecedented reserve of officers and it should be the immediate task of those Service Departments to estimate their own reasonable requirements and then release the surplus for other national needs ; to retain long lists of officers merely " to be called up if required " would be prejudicial to vital national interests.

It is obvious that all Service requirements for a future war cannot possibly be foreseen in peace time and that a considerable " pool " of

officers must be reserved to meet contingencies as they arise, but, even so, there is a large number of officers who by reason of age, infirmities or other physical disabilities, or because of excess of numbers of their particular standing or qualifications, could not normally expect to be re-employed with their old Services. These are officers who can and should be classified as permanently " retired," and they should be specifically and individually informed that they are free to offer their services for any other work of national importance.

Having adopted this broad principle, which should be applied to retired officers of all three Services, it will be of interest to summarize the various classifications of officer reserves and see what is their peace-time status, their functions in war, and to what extent they are organized and kept ready to perform those functions.

RESERVE OF OFFICERS FOR THE ROYAL NAVY

Retired Officers R.N.

The first reserve of officers for the Navy is the Retired List of regular officers. The Regulations state that " His Majesty has the power to call all Retired officers into active employment in case of war or emergency, but the first selection for employment will be made from those who are within the age limits specified below." Why it is necessary to " specify " this limit for each rank on the retired list, seeing that in every case it is 60, is one of those mysteries for which there can only be an " official " explanation. The age limit of employment for Flag Officers is not specified ; yet, in many ways, physical and mental fitness are of increasing importance as responsibility becomes greater, while in the ordinary course of nature they vary more as between individuals as men grow older.

In no class of reserve is there greater scope for reforms than in the case of the Retired Officer R.N. His very classification is a misnomer and has led him to be regarded both within and without the Service as a " has been " ; in the Press and private life he is, at times, even referred to as ex-R.N.—an appellation which can only be achieved by a gentleman who was a naval officer but who has resigned his Commission or an individual who has been dismissed the Service for conduct which, officially at all events, no longer justifies his calling himself a gentleman.

An officer on the Retired List of the Navy retains his Commission and rank, and the Admiralty, in return for having absolute claims on his services, pay him the compliment of addressing him in exactly the same way as his brother officers on the Active List ; moreover he shares with them the restriction that he may not proceed abroad without their

Lordships' permission. On being called up he assumes command in all respects in the rank and with the seniority which he held on the active list at the time of his retirement.

In other words he is expected to take up his duties and responsibilities as if there had been no gap since he laid them down. But, in practice, there may have been a very long gap, and during the recent crisis it was the lament of many retired officers that they had had no opportunity to keep themselves up-to-date and felt very much out of touch with a Navy in which even the helm orders had been changed since they were last afloat.

Efficiency is a paramount reason for very careful selection and periodical instruction of those officers who are the Navy's first reserve for the specific duties they are to perform in war. This means occasional interviews and medical inspections to ensure that an officer is still up to the mental and physical standard which his war appointment will necessitate, and facilities for attending appropriate courses of instruction or lectures. Those officers who are destined for re-employment afloat should be appointed as " additional " to one of H.M. sea-going ships during fleet cruises and exercises for not less than a week every three years. Other officers of this First Reserve List should be given opportunities to visit the places or establishments for which they are designated. In no other way can the officering of the Navy in war be made complete and efficient and ready for any emergency.

Then there must be a " pool " of officers available to fill new appointments which cannot be foreseen beforehand. They, too, must be mentally and physically fit for service, and they should only be retained on a Second Reserve List so long as they remain so. They, too, should attend periodical lectures or be given opportunities to pay short visits to the technical schools in order to keep in touch with Service developments.

Neither of these two classifications should be designated " Retired " officers at all—they are not retired in the sense that the word implies : they are officers retained on a waiting-list for active employment and they should be regarded and treated as such. They should be shown in the Navy List as First Reserve, or Second Reserve of Officers—Royal Navy ; the former implying that they have individual war appointments ; the latter that they are available to fill any appointment for which they may be selected.

There remains the officer who has well and truly earned retirement, whose health will no longer permit him to return to active service of any kind, or who for any other reason cannot be retained on either of the Reserve Lists. These officers should, of course, retain an honoured place on the Navy List, but like their military contemporaries of over a certain

age they should be free to play such part as they can in the national war effort, other than active service.

Royal Naval Reserve Officers

Officers of the Royal Naval Reserve—with whom Retired Officers of the Royal Navy are sometimes confused by the uninitiated—are all recruited from the Merchant Navy. They have to possess certain standards of proficiency as navigating experts and seamen, and they undergo qualifying courses in the various naval technical schools.

Broadly speaking they take command "with but after" naval officers of corresponding rank and seniority.

In the late War they formed an invaluable officer reserve and held appointments in H.M. Ships of almost every description as well as in the Naval Transport Service, which ultimately became practically a special service under semi-civil control.

To-day it seems desirable that the functions of the R.N.R. Officer should be reviewed in the light of changed conditions and the large reserve of regular naval officers. The special qualifications of the R.N.R. Officer are that he generally comes fresh from the sea, he has expert knowledge of merchant ships and the loading and landing of cargoes, and a good grounding in naval weapons, discipline and procedure. In a future war, ships of our Merchant Navy will have to defend themselves from attack both by sea and air, while amphibious operations may again be called for. As regards the former, all Merchant Navy officers are now given opportunities to attend short courses on defensive measures; but the R.N.R. officer has the further advantage of naval experience in the fleet and at the technical schools. His services should be invaluable in convoy work and in the organization and fighting of the defensive armaments of merchant ships and as part of the complement of officers in armed merchant cruisers and their like.

To a certain extent R.N.R. officers will still have to take the places of Active Service regular officers who have had to be extracted from their ships for new appointments. In such cases, the periodical training of these officers should be specially directed to fit them for their duties in the class of ship in which they are destined to serve.

The position of officers in a future Sea Transport Service also requires to be defined in the light of experience in the late War.

Royal Naval Volunteer Reserve Officers

The R.N.V.R., as a third source of supply of officers in war time has a very distinguished record of gallant service in the late war. It is

recruited from gentlemen in many and various walks of civil life, who from love of the sea and the patriotic desire to serve their country afloat in case of emergency, give up much of their spare time to naval training in drill ships at some of the principal ports. The facilities afforded by the Admiralty to this class of officer reserve and the kindred R.N.V.S.R. for keeping up-to-date and efficient present an extraordinary contrast to the utter lack of such facilities for the Navy's first reserve of officers.

The particular role of the R.N.V.R. officer in a future war also requires to be more clearly defined and his training should be directed especially to equipping him to fill it. He has hitherto been regarded as available for any naval appointment for which his abilities might fit him ; but these are days when specialization is becoming more and more necessary. The R.N.V.R. officer is often a yachtsman and has expert knowledge of local waters. This section would take kindly to such craft as motor-torpedo boats or high-speed anti-submarine craft such as those in which many distinguished themselves in the Great War.

The Territorial Army has been given the responsibility of manning anti-aircraft and coast defence batteries ; if some analogous responsibility were given to the R.N.V.R. it would add to the prestige of that force and lighten the burden of the Royal Navy.

The Royal Naval Volunteer Supplementary Reserve

This newly-established organization consists of gentlemen who voluntarily undergo courses of instruction to fit themselves for naval service and whose acceptance for enrolment implies that they will be given temporary Commissions in the Royal Naval Volunteer Reserve in war. They form a fourth class of officer reserve for the Navy which gives promise of being of a high standard.

Fleet Air Arm Reserve

A new and highly specialist branch of the Navy which will require an increasingly large officer reserve is the Fleet Air Arm. Recent Admiralty Orders announced a scheme to meet this requirement.[1]

ARMY RESERVE OF OFFICERS

Regular Army Reserve of Officers

The first reserve of officers for the Army is the list known as the Regular Army Reserve of Officers (R.A.R. of O.). This consists mainly of officers who have retired on retired pay or gratuity and who are still within certain age limits which vary according to rank.

[1] See " The Transfer of the Fleet Air Arm," p. 121 of this Journal.—Editor.

Lieutenants, Captains or Majors on this list are liable to be recalled to service until they reach 50 years of age ; Lieut-Colonels, 55 ; General Officers retired as such, 67.

A Commission in the R.A.R. of O. may be granted to officers who have held Commissions in the Regular Army, Indian Army, Militia, etc. Gentlemen who held Commissions in the New Armies during the late war may also be accepted subject to age limits.

This Reserve is divided into two Classes :—

Class I.—Fit for general service.

Class II.—All other officers of the R.A.R. of O.

Officers in Class I are automatically transferred to Class II on attaining the following ages : Lieutenant, 35 ; Captain, 40 ; Major, 45 ; Lieut-Colonel, 50 years.

Class I will be used mainly to expand the Regular Army from peace to war establishment, and the names of certain officers of this section of the Reserve are included in the periodical mobilization returns. All officers in this Class must normally reside in the United Kingdom. Class II will be used for service at home—such as training troops, Base Commandants, Assistant Provost Marshals, etc., and for garrison duty abroad. These officers rarely know what their duties will be on mobilization and their first orders in many cases are merely to report to their Regimental Depot. Hardly any of the officers of either Class I or Class II receive preliminary or refresher training in peace time.

In view of the rapid changes which are taking place in the Army and in warfare generally, it is of vital importance that officers who are going to command or train troops, or who are to be given General Staff appointments other than those of a purely administrative nature, should have facilities for keeping themselves up-to-date. As such facilities must necessarily be limited, it is all the more important that, wherever possible, individual officers should know the actual appointments they are to take up or at least the nature of the duties they will be required to perform if they are called out ; they can then concentrate on fitting themselves accordingly. At present, an officer who has been retired for more than two or three years feels he is getting less and less capable of meeting the responsibilities which will be his in case of emergency.

Supplementary Reserve

This is a small reserve of young officers who are given temporary Commissions and receive training with the regiments to which they are attached. It is really the modern equivalent of the old Militia.

Indian Regular Reserve of Officers

There is an I.R.R. of O., on the same lines as the R.A.R. of O., which consists of retired British officers of the Indian Army. These can be called up in exactly the same way as the R.A.R. of O. They are at the disposal of the India Office, but can be "lent" to the War Office.

A considerable number were so "lent" during the recent crisis; but, so far as is known, none had the least idea what he was to do.

It would certainly make for efficiency if such of these officers as are not likely to be required by the India Office in the event of a European war could be given an idea of the duties they would be called upon to perform by the War Office. The same remarks as regards facilities for training or instruction apply as in the case of the R.A.R. of O.

Officers Emergency Reserve

Members enrolled in this organization are not required to have previous military experience, but technical qualifications are desirable. They must be between 31 and 55 years of age, and must give an honourable undertaking to join up in an emergency. Enrolment implies that they will be given Commissions if called out.

The technical qualifications sought include engineering (civil, mechanical, electrical, automobile), architects, chartered accountants, barristers, dentists, journalists, etc.

The provisional establishment is 5000; it is understood that some 20,000 applications have been received.

Territorial Army Reserve of Officers

The T.A.R. of O. is a reserve of officers for service in emergency in the Territorial Army only. They receive no training.

Regular Officers of over Military Age

There is a very large number of Army officers of over military age. These, unlike their naval contemporaries, are no longer liable to be called out. They are, in effect, private gentlemen who retain their military ranks but who are under no further obligation to serve. Nevertheless, a large majority is only too anxious to be re-employed should emergency arise, and the War Office was beseiged with applications from this source during the recent crisis.

Here, again, there is "man-power" with very exceptional experience and qualifications which would be invaluable to civil organizations in

war if not required by their old Service. It is quite clear that the Army could not employ a number of the officers in this category; in other cases they could not be wanted for the first few months of a war, at any rate. It is in the national interest that their position should be made clear to all such officers who apply for re-employment. Others are, of course, already free to give their services elsewhere.

RESERVE OF OFFICERS FOR THE ROYAL AIR FORCE

The Royal Air Force, being a newer Service, has had more freedom to legislate for a reserve of officers to meet present-day requirements. Naturally, the chief need is for a reserve of flying personnel, especially in connection with the huge expansion which is taking place. This implies a large force of young officers or potential officers who must be trained and kept efficient.

There are four categories of R.A.F. Reserves :—

1. The Retired List of R.A.F. regular officers.
2. The R.A.F. Reserve.
3. The R.A.F. Volunteer Reserve.
4. The Auxiliary Air Force Reserve.

R.A.F. officers on the retired list can be called back for service within certain age limits which vary with their ranks.

The R.A.F. Reserve is composed of officers who have held short-service Commissions and who have retired from the Service, also a new special reserve of pilots recruited from young men who can spare twelve months for intensive training before embarking on a career.

The R.A.F. Volunteer Reserve is mainly intended to provide a less intensive training for much larger numbers without interruption of their civil occupations.

The Auxiliary Air Force Reserve consists of officers retired from the Auxiliary Air Force.

CONCLUSION

In providing for periodical training which will ensure that flying reserve personnel (*i.e.*, that intended for the most active Air Force duties in war) is kept efficient and ready, the Air Ministry set a good example to the other Service Departments. But flying is by no means the only art of war which requires constant practice ; those officers of the Navy and Army who are destined to be called out of retirement cannot be expected to be ready and efficient if their knowledge of weapons and their usage is allowed to rust or grow stale, much less can they be expected to use efficiently new and unfamiliar weapons.

The difficulty of organizing their man-power for war is admittedly one of the weak joints in the armour of democratic nations ; but there is no excuse for this weakness as regards that section of our nation which is already listed, whose qualifications are known or can easily be checked, and which is already legally bound to serve if called upon.

NOTE

The views contained in the foregoing article are known to have been expressed by a number of retired officers during the recent crisis.

It is understood that the subject is receiving close attention by the Authorities.

The Council of the Royal United Service Institution have offered the use of the Institution's theatre to the three Service Departments to facilitate lectures, discussions and instruction for such officers, whether Members or not.—EDITOR.

THE IMPORTANCE OF STUDYING NAVAL HISTORY

By Admiral Sir William M. James, K.C.B.

THIS lecture [1] is entitled " The Importance of the Study of Naval History." There is a positive ring about those words and they contain the assumption that it *is* important to study naval history. A lecture under these terms might therefore consist of dotting the i's and crossing the t's ; in fact, preaching to the converted ; but it is not quite so simple as that.

No difficulty, of course, arises if attention is confined to the romantic aspect, and to the value of reading the naval history of this country for its effect in inculcating a feeling of pride in what our forebears have done for us ; in producing, to use a modern expression, a feeling of " uplift," which may strengthen our determination to-day when faced with a crisis. It has been said that a man who talked to Pitt came away from his presence feeling a braver man, and the same might be said of those who read the deeds of our great Sea Captains : an hour spent in their company must leave some effect. Moreover, naval history is no longer presented in a dry-as-dust form ; the magnificence of the setting, the fortitude, the skill and the inspired deeds of the principal actors and those peculiarities of character—sometimes startling and sometimes so amusing—which were developed in the course of years of strange life at sea, have to-day attracted the attention of distinguished writers who offer to the present generation fascinating pen pictures of our great seamen. Many who only knew Drake as the gallant Elizabethan buccaneer who adventured into unknown seas and gladly faced unknown dangers in the service of his Queen, can now appreciate the full stature of the man, thanks to Corbett and E. F. Benson. A. E. W. Mason was recently attracted by the tremendous story of the Armada, and, whether or not " Fire over England " is accurate history, tens of thousands of our people know more about that great episode than they did before, and no doubt subconsciously tens of thousands have, through the realization of what those splendid seamen did, fortified their own spirit to resist to the end any enemy attempt to gain a foothold on these shores. Anson's voyage —that epic story of fortitude and determination, was probably little

[1] A " Julian Corbett Lecture " delivered by Admiral Sir William James, at the University of London, on 8th November, 1938.

known, except to the historical student, until recent years ; but to-day thousands of our people know what manner of man this Anson was. Sir Geoffrey Callender has added a great contribution to this rich store ; our Sea-Kings, as he so aptly calls them, are to thousands no longer nebulous figures whose names are only kept alive by the naming of the ships of the fleet : they live again, and what they did for England is remembered with gratitude and intense admiration. In the more embracing field, Sir Julian Corbett has given naval operations—dry stuff under less inspired pens—new life and vigour, and transformed them into something glowing with action and with human interest. Sir Charles Firth said : " Corbett began as a historical novelist and became a historian : " How fortunate that it was so.

Yes, this generation is indeed fortunate that the magnificent drama which is to be found in our naval chronicles has attracted this attention, not so much because it is only right that our people should know why we occupy such a proud position in the world and why our Empire splays half across the map, but because the very fact of reading about those great seamen and those they commanded must subconsciously strengthen a desire not to fail them, not to surrender what they won for us against great odds.

But though there are no doubts on this aspect, when we turn to that other aspect of whether a study of naval operations in the past is of any value towards the better prosecution of war to-day, the answer is by no means crystal clear. It can no doubt be approached from many different angles, but I propose to restrict my enquiry to an attempt to answer the following questions : on the plane of grand strategy is there anything to be learnt from the methods employed by our forefathers to weld together the military and naval forces so as to deliver one unified blow to destroy the enemy ; on the plane of major naval strategy is there anything to be learnt from the dispositions of the available ships in the war areas, the combinations, the concentrations and the dispersions which proceeded under the watchful eyes of Anson, Barham and many other great war administrators at Whitehall ; on the minor strategical plane is there anything to be learnt from the lesser combinations and dispersions ; finally, on the tactical plane, is there anything to be learnt from the Fighting Instructions which governed tactics for so long, from the special tactical instructions of men like Rodney and Nelson, or, to come to a later day, the tactics of Admiral Togo ? These are formidable questions to answer, and I make my approach by imagining two men of representative views and causing them to speak their minds.

A. is not a man who regards history as the dust heap of the ages ; he accepts the view that it is fortifying to read the history of the past ;

it gives him pleasure to read about the strategy and tactics employed in the old wars ; and he delights in reading the letters of the great Admirals which have been made available to him by the Navy Records Society. But he at once demurs if it is suggested that the study of these old time naval operations has any practical value to-day. " To-day," he says, " it is impossible to make an aeroplane and very difficult to make a motor car, or a steam engine, or a ship go as slowly as those old sailing ships crept through the water. The time factor is so entirely different that I cannot believe there is anything valuable for us in the tactics of those old time Admirals. ' Reserve your fire until you can see the whites of the enemy's eyes ' was the old order ; now the ship fired at may be below the gunners' horizon. It is a new world."

" Rodney could have his breakfast quietly during the Battle of the Saints, come out from his cabin, take a look round and decide that it was a good moment to put into execution a form of tactics he had thought of and had explained at the dinner table with the aid of walnuts. Nelson could have long talks with his frigate Captains as he strolled up and down the deck of the " Victory " while she approached with deadly purpose towards the enemy's crescent formation. What connection can there be between that life and a life of high speed, wireless, long range guns and aircraft ? Mr. Churchill wrote : ' It might fall to Lord Jellicoe as to no other man—Sovereign, Statesman, Admiral and General—to issue orders which in the space of two or three hours might nakedly decide who won the war.' Those old Admirals had hours and hours, very often days and days to decide what to do next ; ships often did not sail for a week after receiving orders if the wind were adverse. No, there can be nothing in this for us to-day."

" Then, on the strategical plane, he will say : of course I agree there are a few fundamental lessons to be gleaned, but they can all be expressed in the words ' the right force at the right place at the right time.'

" The most powerful weapon in the hands of our forefathers was the close blockade. It was the close blockade that put a strain on the enemy's life and circumscribed his freedom to wage war overseas, and which so often produced the much desired battle between the main fleets."

" To-day there is the hidden danger of the mine, and shore-emplaced guns have acquired a dominance over guns mounted in ships because the shore gun's target is the whole ship which forms the platform, and the ship's gun's target is the one small spot where the gun is mounted : it is no use hitting the platform, which is the whole surrounding country. That is a fundamental change."

" And is there not a great danger in accepting from past history

lessons for the present? It has been said that dispositions in the late war which led to disasters such as Coronel, and the loss of the three cruisers in the Broad Fourteens, were defended on historical grounds. If that is what a study of history leads to, let us put the books back on the top shelf of the library.

"And, more important than all this, has not a study of history led to false and dangerous thinking on battle and the offensive? In the past, the offensive was the uppermost thought in the minds of all our great Admirals; but an academic study of history has led to the dangerous thesis that the object in naval war is always to secure the control of the sea lines of communication, and an over-emphasis on that perfectly true statement has led at times to the disastrous thought that the battle is of secondary importance and that immediate and sustained offensive operations against the enemy are not necessary, provided the sea lines of communication are kept open and the enemy's harassing operations are kept within reasonable bounds. Sooner burn all these books on history than that that disastrous doctrine should permeate the fleet.

"It will be no good looking up what Lord Barham said in 1805 when bombs are raining on Whitehall. It is no good being clever during an earthquake. If you think too much you never do anything because you see two sides to every question. You keep on getting your forwards into a good position, but they never shoot."

B. is a student of naval history and believes that, though weapons may change radically, there are valuable directing posts to be found from the mistakes and the successes in the past which point to the best method of utilizing sea power to-day. He will probably go a long way with A. on the tactical aspect. But on the strategical plane B. will cross swords with A. He will say: "Surely, as we were almost continually at war for two hundred years and as each successive generation of statesmen, soldiers and sailors cannot have failed to have profited from the mistakes or successes of their predecessors, something of importance for us to-day must have been learnt? I admit the speeds are very different, but speed is only a relative matter. There is still the fleet, the Army, the overseas bases, the trade routes. These have not changed through the ages. The one great difference is that, owing to the increase in population and the higher scale of living, we are far more vulnerable to attack through our seaborne trade than in those olden times when we were always at war. You will surely admit that there is something to be learnt from Pitt's supremely successful method of utilizing the available forces to wage successful war, and at least you cannot deny that the long series of skilfully planned and boldly executed amphibious operations conducted by men like Sanders and Wolfe, Rodney and

Monckton, Jervis and Grey, and scores of other brilliant leaders give us something to guide us when we are planning similar operations? I agree that a slavish adherence to precedents may well prove disastrous, but there will always be people who insist on reading a book upside down and we must leave them out of consideration. It is all very well to say that it is no use looking up what Lord Barham said or wrote in 1805, when bombs are falling, but that is just the sort of remark that clouds the issue; it implies that bombs are going to win a war, whereas it will be the exercise of sea power that will decide the final issue, and that fact is of no less, and perhaps even more, significance than it was in the past. I agree that those dignified, unhurried processes of the past are utterly foreign to the rushing existence of to-day; but because the old masters had longer to make up their minds and because a fleet might not sail for a week or ten days after it was ordered owing to adverse winds, it is absurd to state as a corollary that the decisions they took, the war plans they made, the combinations and concentrations they effected have no connection with the world we live in. You laboured your point about the blockade, but if you had studied the history of the late war you would know that the distant blockade and the system of navicerts, bunker control and diversion of neutral shipping for examination had precisely the same effect as an inshore blockade. At least you will admit that there is something to be learnt from the obvious mistakes. The accounts of those dramatic and resounding victories of Hawke and Nelson, the important though less perfect achievements of Rodney and St. Vincent, and the hundreds of minor brilliantly executed operations which bespangle our naval chronicles make joyful reading. But many mistakes, both strategical and tactical, were made and surely there is guidance for us from them?"

A. replies: "You do not admit my contention that undue study of naval history may lead to a belief that war can be fought without battle," to which B. replied again, "We cannot cater for people who read books upside down."

Listen to these words, written by Lord Esher during the Great War: "Why do we worry about history? Julian Corbett writes one of the best books in our language upon political and military strategy. All sorts of lessons, some of inestimable value, may be gleaned from it. No one, except perhaps Winston, who matters just now has ever read it. Obviously, history is written for schoolmasters and armchair strategists. Statesmen and warriors pick their way through the dusk."

But compare this on Kitchener. "History of the past is a sealed book to him. But his instinct, bred of the desert, is perhaps more accurate than any deductions from the past."

Again, compare that with Lord Fisher's description of a Cabinet Committee in 1909. " Custance went back to Cornwallis and Keith, etc. That damned him ! Why not Noah ? Old Haldane shut his eyes and slept." And then this : " Custance completely obfuscated both himself and the Committee."

And here is Mr. Winston Churchill on Sir James Craig's conversations with Mr. de Valera in 1921 : " His conversations were abortive. At the end of four hours Mr. de Valera's recital of Irish grievances had only reached the iniquities of Poyning's Act in the days of Henry VII. There were by that time various reasonable excuses for terminating not a discussion but a lecture."

You may think these chance extracts are not worthy of inclusion here, but I am not thinking of the converted ; I have in mind the doubter, and he might well say : " If that great war Minister, Haldane, refused to be bothered with it all, I had better keep my brain active and spend my spare time guessing who was ' The Ringer ' or ' The Squeaker ' —I am told that the great ones of the earth are inveterate ' shocker ' readers." I feel I am right in saying that the answer is not crystal clear. But I want to find an answer, and I propose to try to find it in history itself, and more particularly in the actions of our great seamen in the golden age of British naval achievement, in the age when there were no histories to study, and when staff colleges and places of learning the art of war were non-existent.

Throughout the golden age naval maritime war was waged on a battlefield whose boundaries were the extended limits of the British Empire. At one time the theatre of hostilities was the East Indies, at another the West. The struggle swayed from the coast of America to the shores of England, from Chesapeake Bay to Gibraltar, the Cape of Good Hope to Ceylon. In this golden age the schoolroom was the battlefield. It was the age when first Boscawen and Amherst and after them Saunders and Wolfe added Canada to the British Crown. It was the age when George Pocock fought three fierce battles in East Indian waters against Comte d'Ache, and later on Hughes fought five bloody combats with the redoubtable Suffren so that the future life of India should be controlled by us and not the French. It was the age of a hundred skilfully planned, skilfully executed joint expeditions in the distant seas in order to wrest some island or territory from the enemy. It was the age when Hawke, Howe, Rodney, Jervis, Keith, Cornwallis and Nelson kept our shores inviolate despite the tremendous preparations made time after time on the Continent to wrest from us all we had gained by the temerity and audacity of our seamen and the foresight of

our statesmen, and to hurl us down again from the dominating position we had laboriously achieved.

For two hundred years, despite the high sounding phrases of the peace treaties, wars followed each other as fast as the ink dried on those portentous documents, and again and again we see the intrepid young leader in some minor affray in one campaign reappearing as the inspired fleet commander in the next. It is impossible to resist the conclusion that each succeeding generation of our seamen profited by the teachings of history; not by reading books, but through the spoken word imparted to them by the responsible leaders of the preceding generation or by seeing with their own eyes the reasons for the success met with by that generation and also the reasons for failure. But when wars do not succeed one another with such rapidity, if there is perhaps a gap of a hundred years between two major maritime wars, and if all those who fought in the last war have long passed to their grave either in Westminster Abbey or an unknown village churchyard, then the spoken word and personal experience can only be replaced by the written word, by history.

Let us take as an example of the value of such experience the case of those who accompanied Anson on his famous voyage. The number of his officers was not great and yet we find in the list John Campbell, petty officer—afterwards Hawke's Flag Captain at Quiberon Bay; Keppel and Byron, Midshipmen; Hyde Parker, Percy Brett, and Charles Saunders, Lieutenants. It cannot have been just chance that years later these names became famous. Those young men watched a great leader fighting against tremendous odds and winning through; at the dining table, on the poop and round the camp fire they must have discussed every aspect of war and heard his views; they were learning history from a master who was making it. Boscawen, too, sailed for many months with and fought under Anson; he must have imbibed Anson's strategical and tactical conceptions.

Those who, in later years, hoped to hear from Hawke the story of Quiberon Bay or even of that earlier dramatic moment when, as a Captain at Toulon, he dared tradition in order to attack the enemy, would no doubt be doomed to disappointment. But Captain Richard Howe was leading the fleet into Quiberon in his frigate; Keppel was carrying such a crowd of sail that he nearly buried his ship under; Alexander Hood and Thomas Graves were commanding officers; those four must have watched through those long years the strategical moves that led up to that great victory.

Rodney and Saunders were both Captains in Hawke's fleet at the Battle of Finisterre. They knew instinctively what he wanted, and,

acting entirely on their own responsibility, they crowded on sail and brought the enemy to action. Rodney learnt from Hawke, and though no doubt he became a difficult, gouty and disagreeable man in his later years, Hawke's mantle had descended on him ; we can see that clearly in his oft-repeated efforts to bring the French to action and in his grim determination when he met the Spanish fleet on his way to relieve Gibraltar. Though Hood detested Rodney, he was his Second-in-Command, and those two men must have discussed time after time the strategical and tactical problems with which they were faced. Saumarez was brought up under Rodney, and it was Saumarez who reacted at once when Rodney initiated a new tactical manœuvre at the Battle of the Saints. Similarly, we find Adam Duncan as Flag Captain to Keppel at the taking of Belle Isle and later on at the capture of Havana, and Kempenfelt serving for years with the victorious Pocock.

Then we see John Jervis, on the bridge of the " Porcupine," reconnoitring Quebec, and standing beside him Wolfe and his navigating officer, James Cook, and thus seeing with his own eyes and hearing with his own ears Wolfe's strategical conceptions and in due course observing the results. Later on, he was responsible for the success of a combined operation in the West Indies.

Then Nelson, listening to much wisdom from Hood and from Jervis ; realizing, perhaps, that Hood, knowing the disastrous results of the implacable hostility between Rodney and his Captains, had formed his officers into a band of brothers ; and seeing the tremendous purpose that actuated every action of the formidable John Jervis, must have been, consciously or subconsciously, adding to an already well-stocked armoury of knowledge, experience and genius.

But with Trafalgar this golden age ended, and the next great maritime clash was a hundred years later. Before the Russo-Japanese war Admiral Togo had had experience of war on a lesser scale, but he had not heard from the lips of a master how war on the grand scale should be conducted, nor had he been an eye-witness of the concentrations, combinations and dispersions that in the end led to victory. Yet for him the written word was at hand and he was an admirer of the great British sea officers.

Let me now take this argument a step further and develop it by making a brief survey of the principal maritime wars. Organized war at sea is of comparatively modern origin. Armies or detachments were, in the olden times, embarked in ships in order to raid or attack the enemy's territory. But these armies, temporarily afloat, did not meet in battle ; the process was what one writer has called " cross ravaging." You could not paddle about in a trireme or a galley and control the sea

lines of communication, and there was indeed no special purpose in controlling those lines. There was comparatively little seaborne commerce and what there was was not vital to the life of the people or to the prosecution of the war. But seaborne commerce slowly grew in magnitude and importance, and then there was something worth attacking, and ships appeared on the stocks which were able to keep the sea in all weathers.

In the Tudor days our own company of merchant adventurers were seeking fresh markets in Russia, Persia, the West Coast of Africa and the West Indies. At the same time Spain was acquiring a monopoly in the West Indies and the Portuguese and Dutch were concentrating their energies on the East Indies and South America. The ships to carry commerce and fighting ships grew up side by side, but the first great clash between large armed fleets took place on a simple issue, and that great battle in the Channel which dashed Spain's high hopes of securing our downfall called for no difficult strategical decisions by Elizabeth's statesmen. To effect invasion the sea lines of communication between the Continent and England would first have to be secured. The British task was clear—to assemble every possible ship and to call on the services of every available fighting seaman to harass the Armada in the Narrows. But there is something more than that in this war. Here we see for the first time ravaging replaced by definite naval operations. It seems just common sense to us to-day that Drake should be dispatched to break up the great preparations in Spain when the news reached England and the purpose of the Spanish king was obvious ; but, at the time, this was a new departure. Later on, when Hawkins and Frobisher denied the use of the trade routes to Spain, the Spaniards, still living in the past and despite their maritime strength, did not make a bold attempt to relieve the irritation by bringing the British fleets to action. Here we see the dawn of a new thought in the handling of naval power. We see the seeds of blockade and ships remaining at sea and cruising in strategic positions. Command of the sea lines of communication had become a definite object.

Let us pass on to the First Dutch War. We need not spend time on the cause ; sufficient to say that the Dutch and ourselves, two enterprising maritime nations, were fierce rivals for the carrying trade, and it was almost inevitable that there should be quarrels, particularly in the distant seas. Fought between great fleets numbering nearly a hundred ships, which make the account of the operations somewhat confusing, these wars have not yet attracted the attention of a writer who could dispel the fog by an attractive rendering of the many comings and goings, combinations and dispersions. But great seamen were

afloat—Tromp, de Ruyter, Blake and Monk; and three great battles were fought off Dungenness, the Kentish Knock, and Portland. The issue was decided off the North Foreland, from which we emerged victorious and after which we were able to institute a blockade of the Dutch coast. We were masters of the sea lines of communication.

Now, although these great clashes between formidable fleets appear to echo the proceedings in the Channel when the Armada appeared—that is to say there were two fleets, like two boxers who had decided to fight it out and settle who was to remain standing up in the ring—yet the protection of commerce, as distinct from the one purpose of settling the issue by main battle, was deflecting this purpose all the time. Men had not yet learnt one of the great principles, and four out of the seven battles in this first Dutch War arose out of commerce protection work. But those who controlled our forces in the second Dutch War were beginning to learn the lesson and the fleet sailed immediately under the Duke of York to establish a blockade, and the Dutch, unable to bear the restriction, put the matter to the test off Lowestoft. Later on occurred that great four days fight from which both sides emerged exhausted. This second Dutch War was the last purely maritime war. A historian wrote: "These wars adhered to the more unstable element simply because neither side could get off it."

There emerges from these two wars the seeds of something new in naval strategy. The attack and defence of commerce could go on side by side with the operations of the big fleets, but it was becoming evident that the issue ultimately depended on the big fleets, and that, though attack on commerce or blockade might force on the decisive battle, they alone were not sufficient. Trade losses would even out, but the attack would continue so long as the main fleet remained in being. There would be no victory until the main fleet was defeated.

Now let me pass on to another war which has received even less attention than the Dutch Wars. It is true that so far as the land campaigns are concerned every schoolboy knows the names of Marlborough's great battles and, at any rate in my boyhood, used to make the acquaintance of old Caspar, while recently Mr. Winston Churchill has enabled his countrymen to realize what a tremendous person his ancestor was; but it is the war at sea about which so little is generally known. I cannot do better than quote what Professor Callender wrote: "Judged by the popular standard, the War of the Spanish Succession on its maritime side seems absolutely colourless, it offers nothing of ornate pageantry that can be set beside the masterpieces of Marlborough. It has none of the alluring quality of the Elizabethan epic—none of the

dogged combativeness of the Dutch Wars. It is sadly deficient in the grand pitched battle ; and when the lists are set and the barriers down, there is no comfortable procession of prizes to make the story worth reading. And yet in no other epoch, unless it be in the war that has just reached its close, has England been more completely mistress of the ocean ways, or given to the world a more interesting exhibition of the manner in which sea power works."

Out of that interesting exhibition I choose for my purpose two striking features. Nearly two-thirds of our ships and half our personnel were employed on trade protection. This was necessary owing to the well-handled and well-delivered attacks by the French. It was this little known war that taught us so much about trade protection. It was in this war that we assembled adequate force at focal points, that we convoyed trade to distant ports through the dangerous area, that we established close convoy for our coastal traffic, which was always a vulnerable point, and that we employed what could be spared to attack the enemy's trade. This was not forgotten by succeeding generations. And in this war, too, we see those conducting the war realizing the tremendously powerful weapon ready to hand when the sea lines of communication are open and policed : I refer to that form of operation known as an amphibious operation, which means a fleet carrying an army overseas and landing it at a selected point. Though not the true diversionary operation which was developed in the next war, the army under Peterborough was carried by the fleet under Shovel for large-scale operations against both Barcelona and Toulon, and the success met with must have impressed men's minds that here was still one more means of attack and one with infinite possibilities, provided the ships could sail for their destination unimpeded.

Then came the Seven Years War. During the wars we have already glanced at, there was always by-play in the distant oceans, raids and counter raids, and small invasions of territory. But now we come to something on a different scale : we must leave The Little Theatre and go over to Drury Lane. The Continent of America was a rich prize worth fighting for ; who was to be master in the Indian Ocean and control the destinies of India had also become a burning question ; moreover, scattered all over the world were countries where riches were to be found and which had attracted the attention of both ourselves and the other maritime Powers. We were at the beginning of the era of colonial expansion, and the war in which the first shot at sea was fired by Captain Howe off Newfoundland and the first shot on land by a colonial Major named George Washington at Fort Duquesne—afterwards Fort Pitt and later Pittsburg, was one in which a successful

outcome depended on the control of the sea lines of communication, although at the same time the threat to our own coasts was always severe. The experiences of earlier wars were not forgotten. It was realized that there must be a dissipation of force to see the armies, their reinforcements, their stores, and their ammunition safely across the Atlantic ; and that there must be a dissipation of force to counter the French concentrations in the Indian Ocean and other distant seas. But it was realized also that there must always be sufficient strength in the main fleet to ensure that the enemy could never control the lines of communication nearer home : it would be no good winning in Canada with the French marching on London.

The task of the main fleet, under that great sea officer, Sir Edward Hawke, was clear. He established a blockade of the French main fleet which, after many weary months, culminated in the battle of Quiberon Bay. This, at one stroke, put at rest all doubts as to who controlled the lines of communication and removed the growing fear of an invasion of England. We see here, too, those dispositions, which later became familiar, to prevent an unduly large concentration of enemy ships. Boscawen's task was to deal with the Toulon fleet and prevent concentration with the Brest fleet, a task safe in his hands. Drake, as we have seen, gave up the usual role of seeking treasure ships in order to confound the enemy's preparations for attack on England. Rodney and other young firebrands now did likewise and harried the preparations for invasion on the French northern coasts. But perhaps the outstanding feature of this war is the new strategy used by Pitt. The passage of the army overseas in the war of the Spanish Succession had no doubt not passed unnoticed, but Pitt improved on this. He realized the unique mobility of an army afloat in a fleet ; he realized that they could appear off the coast when and where they wished. He realized that a comparatively small force of soldiers could thus confuse the enemy's plans and draw away from the main theatre a number out of all proportion to themselves. As Corbett put it, " For Pitt, Army and Navy were the blade and hilt of one weapon and, from the moment the weapon was in his grip, he began to demonstrate the force and reach of his method." That was something new and immensely powerful. The control of the sea lines of communication had become suddenly of even greater importance than before.

Lastly, it was in this war that the soldier and sailor learnt how to conduct an amphibious operation. The first attempt on the French coast was not a success, mainly because the Generals showed infirmity of purpose and that was something Hawke could not abide. But in that first expedition there was a Quartermaster-General called Wolfe,

and Wolfe took note of what happened and wrote the famous memorandum on the subject of combined operations. Only a few years later he was, as we have already recalled, on the bridge of the " Porcupine " with Jervis and Cook, planning an operation which was to become famous in history. His principal naval colleague was that Sir Charles Saunders of whom I have already spoken. Here there was no jealousy between the soldier and the sailor. Both had only one purpose—final victory, and so the fleet carried the Army hither and thither and landed them wherever Wolfe wished, and when by a series of skilful manœuvres he had reduced the enemy's strength at their centre, the fleet carried him and his army to the selected point from which they could reach Abraham's Heights.

In later campaigns we see Rodney and Jervis and many others conducting successful amphibious operations, using the feint landing, using the diversionary landing, just as Wolfe did. It is fair to assume that, although they did not read of these operations at Quebec, all that transpired there was passed on in the dining cabins and on the quarter decks of British ships. No wonder this war of victory all along the line attracted the attention of Julian Corbett ! Quiberon, Quebec, Pocock and d'Ache, Boscawen off Lagos, Rodney at Havre, each of these great affairs and many others packed with dramatic incident, inspired leadership and brilliant execution, had in combination contributed to the birth of our Empire.

Replete, we rested on our oars and, despite the efforts of Hawke and Saunders, the legacy was gradually dissipated, and when the next call on the fleet was made, it was in no condition to meet it. The War of American Independence, which started from small beginnings, grew in intensity until we had to face half the world—France, Spain and Holland in active opposition, and the northern Powers antagonistic and ready to increase still further our enemy's preponderance in numbers on the slightest provocation. We made a fatal mistake at the outset, and then the temptation to get even with the old enemy proved too strong for the European Powers. Graves, the Admiral, and Gage, the General, were given wretchedly weak forces to deal with the early trouble. They could not uphold the King's rule. Once the colonists were organized and steeled to fight and suffer hardships by Washington, the American colonies were lost to us. " You may ravage ; you cannot conquer. It is impossible. You cannot conquer the Americans. I might as well talk of driving them before me with this crutch ! " That was what Pitt said later on. Perhaps there was nothing in past history to warn our people of the folly of attempting too much with small forces, but it provided a lesson for the future.

The stage was once more the five oceans, but now, owing to the main struggle being on the American Continent, the main fleets met, separated and met again in the West Indies and off the American coast. When France, Spain and Holland mobilized their forces against us it must have appeared that by very weight of numbers they would overwhelm us. But that did not happen, and the reason is clear ; whilst some of our leaders failed, Howe, Rodney, Hood and others, though they had not read history, had watched history being made by Hawke and Boscawen at sea and by Anson at the Admiralty. The French Admirals, with the exception of Suffren, had neither read history nor profited by watching history being made, and the accurate parade movement in battle was the limit of their tactical thought ; a determination to decide the issue by battle was secondary to some ulterior object, such as the capture of an island. Rodney, gouty, irritable, hated by his Captains—" My eye on them had more dread than the enemy's fire and they knew it would be fatal "—was untiring in his efforts to bring de Guichen and de Grasse to battle. At long last, owing to a mishap to a French ship, his chance came, off the Saints Rocks, and then those three days and nights of chase had their effect and victory was not turned into crushing defeat. The old fires that blazed up off Havre and during that epic night off St. Vincent, when he was hastening to the relief of Gibraltar, were quenched by fatigue. There was no pursuit. " We have done enough," he said. Hood was beside himself with mortification. " Surely there never was an instance before of a great fleet being so completely beaten and routed and not pursued. My feelings are so strong that I must express myself so to you to give vent to the perturbation and anguish of my mind . . ."

De Grasse lived to fight another day, and when he dropped his anchors in the Chesapeake, Cornwallis had no choice but to surrender. If the French and Spanish strategy throughout the war had been akin to their last joint operation on the American coast, we would have emerged from the war in very different plight. Earlier, d'Estaing might well have ended the war in America with one blow when he appeared off Sandy Hook and sighted Howe's fleet at anchor ; but it was not the French way to seek decisive battle.

It is, however, in European waters that an astonishing picture of ineptitude is shown. Every English boy knows the story of the Armada ; but there was an equally formidable armada assembled during this American war, and assembled at a time when we could only muster a comparatively weak force to bar its path up-Channel. The insuperable difficulties of merging into one tactical formation the ships of two nations was revealed. Discussions, jealousies, difficulties of language,

divergence of methods soon showed that the strength of that great armada of seventy sail of the line under the French Admiral d'Orvilliers was a paper strength. Hardy, with his thirty odd ships, could only watch, threaten, and perhaps take advantage of the enemy making detachments, but he too was old and infirm, and during that extraordinary month, the two fleets were usually fifty to a hundred miles apart. Kempenfelt, that great Chief of Staff, was in despair. " Where is Lord Howe at this alarming period ? I cannot say more ; you will divine the rest. The confused conduct here is such that I tremble for the event. There is no forethought ; we are every day, from morning till night, plagued and puzzled in minutiæ whilst essentials are totally neglected. An obstinate way of negativing everything proposed makes all advice useless . . ." We had confided our fate to the hands of an Admiral unfit for the task, for political reasons. But in the event this did not matter because the armada only reached as far as Plymouth and then lack of purpose, sickness and those heralds of weak policy—councils of war, put an end to the whole grandiose enterprise. D'Orvilliers, de Guichen, de Grasse, d'Estaing, were skilled seamen, but, one after the other they threw away golden opportunities because, if they had read history, they had read it through blurred spectacles. The war was not to be won by attacking islands in the West Indies ; it could only be won by victory over the enemy's main fleet. We had a narrow escape. As an example of the enemy's ineptitude, our fleet, though it did not control the sea lines of communication, three times relieved Gibraltar, and on the last occasion Howe found himself with 149 sail, convoyed by 34 ships of the line in the presence of a great combined enemy fleet of 48 ships ; but that fleet sailed away.

Now we approach the last act in the golden age. It is a fitting climax, because, although the stage is smaller, it is crowded with great actors and the combinations, concentrations and dispersions are on the grand scale. We find My Lord Barham at the Admiralty, My Lords Keith, Bridport and Cornwallis, Collingwood and Nelson in turn commanding the forces which stood between our country and invasion. It can be said that between 1797 and 1805 the French naval operations were all dominated by one idea—to command the Channel long enough to pass an army across. We were throughout handicapped by the geographical factor : the French Minister of Marine could send couriers to Brest, Havre, Rochefort, and effect quick changes in disposition, but our fleets, taking up their now historic positions off the French ports, could not communicate with each other nearly so quickly, nor could orders from Whitehall reach them by frigate for a long time, and during this stirring period the enemy did effect great concentrations. Jervis, with fifteen ships, was at one time faced by thirty-eight ; Keith, again

with fifteen, was in the presence of forty-eight enemy ships. But those heavy concentrations never attacked; indeed, they dispersed at the wrong moment, and so Jervis was able to strike at the Spaniards at St. Vincent. Opportunity after opportunity of bringing weaker forces to battle was missed by our enemies and then, when that final concentration of ninety pennants was made at Brest, our difficulties were removed because we too could concentrate.

It is remarkable that that great genius Napoleon should apparently be unaware of the teachings of history and should, time after time, endeavour to effect his purpose by evasion—by avoiding major battle in the hopes of ultimately concentrating the necessary forces in the Channel. "Let us be masters of the Straits for six hours and we shall be mistress of the world," he said; but his plans went awry. Even the move to Egypt was in part designed to whittle down our naval strength at the centre. But instead of containing Nelson's fleet or fighting that fleet before proceeding East and establishing control of the sea lines of communication, the French fleet moved East and anchored in harbour and Nelson found them there. Villeneuve sailed for the West Indies and sailed back again. On his way back he encountered Calder, but made no attempt to force on a fight to a finish. Cornwallis was off Brest to prevent concentration, but it was open to Villeneuve to pick up the Ferrol fleet and then the Rochefort contingent, and with this strong force proceed North to raise the blockade and increase his strength by the Brest fleet; but he surrendered the initiative. Napoleon eventually despaired, and the army that had been looking to the North for so many long months was given the order to right turn and march to Austerlitz. This is anti-climax, and the curtain of this last act in the golden age is that tremendous affair off Trafalgar. Forgetting all that happened on the last occasion when they tried to make one tactical formation with the Spanish, we find Villeneuve writing: "Our naval tactics are out of date, but all my delusions did not vanish until the day on which I saw the Spanish ships which are joined to mine. Then I was obliged to despair of everything."

The combinations, concentrations and dispersions during these vital years are perhaps rather confusing and difficult to follow, but unlike the Dutch Wars, the reason for each movement is crystal clear, and it is also beyond any question that it was because our leaders had a different conception of naval warfare and one that had been passed on to them by their predecessors that we emerged victorious. But mark this: for reasons beyond Nelson's, and afterwards Collingwood's, control, that historic victory was in a sense incomplete. There could be no more threat of invasion, but the sea power of France was not completely

broken and we suffered much loss and inconvenience to our seaborne trade during the next ten years.

Now let us skip a hundred years. Steel has entirely replaced wood, big ships can move through the water at over twenty knots, guns can fire effectively at over 10,000 yards, and torpedoes can run straight for two or three miles. But, despite this immense change in material, we detect the same processes leading to victory in the Russo-Japanese war as in the days of the wooden walls. For the Japanese, all depended on controlling the lines of communication from Japan to the mainland; for the Russians, all depended on breaking that control. If the Russians would not put the matter to the test in major battle, then they must be contained or blocked in harbour. In the end the Russians were driven to take a step that was foredoomed to failure. The Russian fleet staggered out from Europe and met the highly trained and war experienced Japanese fleet in the narrow seas, with the inevitable result. Is it stretching the imagination to say that Togo, keen student of history, had noted the immense effect of the unexpected tactical manœuvre practised by Nelson at St. Vincent, by Hawke off Toulon, by Rodney at the Saints, and that he confounded the Russians by doing likewise? Is it not possible that he had marked the results of half-begotten battles, and so made a tactical plan that would ensure continual attack and pursuit until no Russian ship remained afloat?

After that war, speed developed steadily and guns and torpedoes rapidly increased their range. Perhaps the Great War is not yet history as we are thinking of it at present. It would obviously be stupid if its lessons were not reflected in the plans of to-day, but let me remind you of one or two of its features. The convoy system, which was introduced as soon as the submarine menace demanded it and as soon as ships for the purpose and assembly ports were available, and all the other measures for guarding our trade routes were singularly reminiscent of that War of the Spanish Succession which I mentioned earlier. The whole system of defence of trade and attack on enemy trade taking place under the wing of the main fleet; the disinclination of the enemy to settle the issue by main battle and thus their eventual defeat and surrender; the great amphibious expedition to the Dardanelles and the minor expeditions in many other seas; the command of the Channel lines of communication to sustain the army in the field; our difficulties in crushing the attack on trade because Jutland, owing to the retreat of the German fleet, was only half-begotten and therefore we could not release that great strength assembled at Scapa to join in the task which nearly proved too heavy for the minor forces available; all these things were repetitions of what had happened before. Hawke,

warned by his pilot of the shoals and dangers ahead, said : " You have done your duty, maintain the present course, crowd on more sail." Beatty, aware of the danger of unknown minefields and submarines, gave a similar order in the Heligoland Bight. Drake, Rodney, and Nelson revelled in hazardous attacks on the vessels preparing for our discomfiture in enemy ports ; Keyes and his officers and men did likewise at Zeebrugge and Ostend.

If Pitt, Anson, Hawke, Howe, Rodney and Washington had been watching it all from a celestial sphere it would have appeared quite familiar ; the main fleets facing one another, the stream of men and material crossing the Atlantic in convoy, the only difference being that the stream was moving eastwards—from America to Europe instead of from Europe to America. Perhaps a disappointed Pitt would have protested : " I made you the great amphibian. Have you forgotten ? " as he watched for month after month the deadlock on the Western front.

Once again, our people, unaware of all that had gone before, muttered and asked what their fleet was doing. They were burning Hawke's effigy as he was pressing on into Quiberon ; the reputations of our sea commanders in the Great War were seared by the written and spoken word. A British Prime Minister wrote :—

" After the battle of Jutland Admiral Jellicoe came to the conclusion it was not safe for his imposing armada of enormous " Dreadnoughts " to undertake prolonged operations to the South of the Dogger Bank, as the risk of mines and submarines was too formidable. They were not to enter the North Sea unless they were forced to do so by direct challenge from the German High Sea Fleet. Meanwhile the flagship must be interned in safe creeks, and the flag had to be carried on the small craft, the nimble destroyers and the weather-beaten trawlers. Here is the ' Nelson touch ' up-to-date. There was an atmosphere of crouching nervousness,"

He forgot that Hawke had to wait and wait through long weary months, content that he was doing his duty and keeping his fleet in a high state of efficiency, for the hoped for day when his frigates would report the enemy at sea. A hundred and fifty years later Jellicoe and Beatty were compelled to do the same. There was the same grim determination, the same irksomeness, the same disappointments. The enemy had his chance when the Grand Fleet was in his waters on 31st May, 1916. They were near his bases, if his ships were damaged they would be able to stagger home, the disparity in numbers was not by any means overwhelming ; but he attempted to achieve victory without major battle and he failed, even as Napoleon failed.

That completes my survey. I have endeavoured to build up an argument from history itself. That argument is that when wars follow one another in quick succession each new generation of naval officers has seen history enacted before their eyes and heard history from the lips of men who, by their strategy, tactics, concentrations and dispositions, have won through to victory; and therefore when the spoken word and the visual evidence are absent something must replace them, and that something is the written word. The complete change in weapons of war, the heightened tempo of to-day has, of course, rendered much that was done in olden times out of date and unrelated to the task that faces us now; indeed, an attempt to implement some plan, just because it led to success long ago and for that reason only, would be courting disaster. But I suggest there are some fundamental principles that do not change and that in history we find certain traffic signs on the road to victory. I suggest that history at least provides an occasional amber or a red light. Let anyone postulate that all that is necessary is to control the sea lines of communication and that, therefore, it is of secondary importance to use all possible endeavour to bring the enemy to battle, and the red light shows. Let it, for example, be suggested that a token or feeble force should be sent to a potential war area—a force that, if things go awry, will be hostages to fortune or be treated with contempt—and Admiral Graves will switch on the amber light. History has warned us; we should stop for a moment and think again.

These examples could of course be multiplied a hundredfold. But I do not suggest that those traffic lights are numerous; if imagination conjures up too many of them the journey will never be completed. Nor will it be completed if red is mistaken for green and green for red.

Finally, let me emphasize that what appears to one generation as just common sense was not understood by the earlier generation, and that much of the rich store of knowledge accumulated in history is due to the men who turned a blind eye to the red light and, by dashing past it successfully, turned it into a green light for future generations. In a word, our position in the world to-day is due to those great sea officers who knew when to obey the red and the amber lights and when to ignore them.

BRITISH SEA POWER AND WORLD PEACE

By Professor R. B. Mowat, D.Litt.

IT was Mahan, that student-sailor, who inferred from wide reading of history, ancient and modern, that the rise and maintenance of empires has always largely depended on command of the sea and that the decline and fall of an empire has likewise largely if not completely depended on command of the sea.[1] Naturally, he did not ignore the victories and other exploits of land armies, but he contended that practically all land forces operating on the grand scale of " imperialism," depended to a surprising extent upon sea communications. He produced evidence for this contention from the struggle between Rome and Carthage, particularly the Hannibalic War in Italy ; from the Hundred Years War between France and England ; the Wars of Louis XIV and the Colonial Wars of the XVIIIth Century. When he came to the French Revolutionary and Napoleonic Wars his proofs were even more abundant and convincing. A student of the World War might come to the same conclusion. English readers, at any rate, understood Mahan's theory and adopted it with enthusiasm. It rationalized their vague information about Henry V., Clive, Warren Hastings, Nelson and Wellington. The great land armies which the British people had to raise in the World War rather shook their belief in the all-sufficiency of a navy, but reflection on the German submarine campaign and revelations about the shortage of food among the Central Powers somewhat restored their faith.

Since the World War the English seem to have lost confidence in the all-sufficiency of naval power, partly because they have all the Empire they want, and therefore are no longer " imperialist " ; partly because they have let go enormous Imperial domains—the Dominions ; and partly because they feel that air-power has undermined (or rather " overmined ") sea-power. If this were so, it would be a great misfortune for the British people and perhaps too for the rest of the world. For it can be maintained—doubtless with certain reserves and criticisms —that British sea-power, on the whole, was a beneficent influence in the XIXth Century. That period is now regarded, a little wistfully, as a secure and progressive age. And yet it was an age of revolutions and of assertive nationalism, when the old public law was broken, treaties

[1] This loose and misleading phrase has been largely used by historians who really meant by it ' the control of sea communications.' Actual ' command of the sea ' is necessarily very local and usually very temporary.—Editor.

were repudiated, and " unilaterally " revised. The Union of Italy was achieved, contrary to the whole European treaty-system. Bismarck united Germany by means of three wars and the cynical disregard of solemn compacts, old and new. France had two great revolutions ; the Second Empire rose and fell. Balkan nationalities rebelled and were freed ; the Turkish Empire disintegrated. In the United States a gigantic Civil War raged for over four years. A French army intervened in a Mexican civil war and established a short-lived Habsburg Empire. Mexican Republicans captured and shot—regardless of the protests of all Europe—the Emperor, brother of the Emperor of Austria. An old and respected Imperial throne fell in Brazil. These are only some of the numerous, disturbing and dangerous revolutions which civilized mankind went through in the XIXth Century, along with numerous large-scale " adventures " of great and small Powers in Africa and the Far East. Nevertheless that century, viewed from the present, appears as a stable period. Poets and philosophers assured the people that the world was growing better and the people—unperturbed, in spite of incessant revolutions and wars in one part of the world or another—believed them. There was universal confidence in the progress of mankind. Every young man and girl felt that they had a future. It was an age of quiet optimism. How different from the present Age ! And yet is the present age really much more subject to revolutions, *coups d'état*, violent revisions of treaties and large-scale political " adventures," than was the XIXth ? It would be difficult to contend that this is so. The difference between the psychologically assured XIXth Century and the psychologically unbalanced and physically tottering XXth Century must be due to something else than an alleged difference in the " revolutionariness " or illegality of the two periods.

Professor Zimmern in a pamphlet or rather in part of a pamphlet which, small though it is, is the most suggestive piece of naval thinking since Mahan, has put forward an explanation. Briefly, his theory is that the British Navy and British command of the sea were a steadying force which enabled Europe and the rest of the world to have revolutions and civil wars too, without any general conflagration. The Navy kept the seas safe, maintained open lanes of commerce, enabled the world to go about its daily business ; and so revolutions and wars could be localized. The world did not clearly recognize the benefit which it was receiving from the British Navy. People cheerfully assumed that wars could go on anywhere, any time, without the whole world catching fire. They had a belief in progress as a law of Nature and believed that general security was an established thing. They now may realize, since Great Britain gave up command of the sea, that this was a condition of their happiness, their security, their comfortable belief in progress.

This view, of course, puts the case for the British Navy as the Englishman would put it, rather than the foreigner. And doubtless instances in XIXth Century history could be cited in which the British Government used the Navy ruthlessly for purely egotistic national purposes. It seems to be agreed, however, that in general British sea power was used with moderation and that the result was in general good for all the world. The maritime slave trade was suppressed, piracy was exterminated, and (as already mentioned) the trade routes of all the world were kept open. Every war was and had to be localized or else it would have conflicted with British sea power. As the United States is now, Britain was then the great neutral—a neutral, however, which did not try to isolate itself, but on the contrary was vigilant in every quarter of the globe to preserve, with overwhelming force, the peace of the seas.

After the World War the British Government abandoned the " two-Power Standard," agreed to naval parity with the United States (not that there can be any objection to that) and allowed the Navy to be equalled or nearly equalled, in certain branches (for instance, submarines) by other Powers. The result has been international chaos in the Mediterranean during the Italo-Abyssinian War ; around the shores of Spain during the Spanish Civil War ; and in Far Eastern waters during the Sino-Japanese hostilities.

The Foreign Office have been quick to feel the results of diminishing British sea power, and have worked hard to find a corrective and to create a new system. After the outbreak of the Italo-Abyssinian War, 1935, they succeeded in making some nine or ten separate agreements with the Mediterranean States—except Italy—beginning with France. These agreements, though not literally restricted to naval co-operation, in effect amounted to this. They were a reply to the Italian Government's claim or alleged claim to command in the Mediterranean. These agreements bound the signatory parties to mutual assistance in case any one of them were involved in war as a result of its participation in sanctions under the Covenant of the League of Nations. They lasted until the end of the Italo-Abyssinian War in July, 1936.

In the last months during the Spanish Civil War of 1936 they negotiated a supplement to the Non-Intervention Agreement to include an international naval patrol of the coasts of Spain, to be undertaken by the British, French, German and Italian fleets. This naval agreement was short-lived ; it broke down after the submarine attack on the German cruiser " Leipsic " on 18th June, 1937.

The third, and most vigorous effort, of the Foreign Office in naval affairs, was the initiation of the Mediterranean Nine-Power Agreement

adopted at the Nyon Conference in September, 1937. This was the quick and forceful reply of the Mediterranean States to the " pirate submarine " policy which had been started by some unknown government or naval commander in August. The Nyon Agreement brought into operation an international naval patrol of the Mediterranean, with the British and French fleets undertaking a " general " patrol, the other States being assigned local sectors. This not only checked the pirate menace, but was an obvious assertion on the part of the Mediterranean States, other than Italy (which did not sign the original Agreement) that the Italians did not command that sea. The Italian Government subsequently adhered to the Nyon Agreement and joined in the patrol on a basis of " parity."

The inference from all this will seem to be that naval power is the most readily effective force with which to support diplomacy. It has been alleged that British diplomacy has often been ineffective since the end of the World War, and that the reason for this was the relatively " disarmed " condition of Great Britain. The British Government lost their leadership, their prestige, and their capacity for initiative and for effective persuasion. In 1935–38, however, they gradually reasserted Britain's position in international affairs, assumed the initiative among the peace-loving Powers, and restored some order in certain troubled areas of the world. Such success as this policy achieved may have been due to the general British rearmament of those years, but it was also due to the assertion of naval strength, made by Great Britain in co-operation with a number of other States and referring specifically to certain regions. It may be, therefore, that one of the more important means of peace for mankind will be found in *regional naval agreements*.

There has been for years discussion concerning possible regional agreements under the Covenant of the League of Nations. The Locarno Agreement lasted for some ten years. Except for the Locarno Agreement, and the Franco-British Pact which has replaced it, not much seems to have come of land regional agreements. Peoples or Governments are a little shy about making them, because they naturally involve the possibility of land warfare which is tremendously costly, liable to spread, and so to precipitate a general conflagration. Mobilization of land troops cannot be concealed and always causes general alarm.

A navy, on the other hand, scarcely requires to be mobilized. The British Navy and even the sea-forces of lesser naval Powers are represented in nearly every part of the world where ships can go. A naval concentration can be made rapidly, and as a rule does not attract great public attention. Naval pressure can be applied without any seizure of territory. Co-operation between fleets of different States is much

more easy to carry on than co-operation of land armies, because the sea belongs to nobody in particular and so fleets can take separate stations without having to bargain with the sovereign of territory for quarters. Naval patrols and even naval blockades are usually not regarded as seriously by those against whom they are directed as land operations.

For these reasons, it is submitted, progress towards international security may be made along the line of regional naval agreements. The British naval agreements concerning the Mediterranean made during the Italo-Abyssinian War had a pacifying effect in the Mediterranean. If the Nine-Power Treaty concerning the maintenance of the *status quo* in the Pacific were an agreement involving the possible use of the Contracting Powers' navies, instead of being merely an agreement for consultation, the peace of the Far East would never have been broken by aggression.

Naval agreements, like any others, naturally require willingness to co-operate, if they are to be effective. There are some regions in which such willingness is already assured. All the peoples bordering on the Mediterranean, for instance, except the Italians, are obviously alarmed by the pretensions of the Italian Government in that sea. They have twice in the last three years, for limited purposes, entered into effective naval agreements. In the Far Eastern Pacific the British, French and Dutch Governments could probably reach an effective naval agreement with each other, and even, in certain circumstances, with the United States. Other desirable, perhaps possible, naval agreements for particular regions will occur to any reader. One, between the British and Italian Governments ought, in view of the warm friendship of the two nations down to recent years, to be possible and effective.

It is not suggested that regional naval agreements would solve all the troubles of the nations, or that naval pressure can always be exercised without the possibility of its leading to land warfare too. It is suggested, however, that they do offer a promising line of international advance towards a security system. The British Navy is, except for that of the United States, the most powerful in the world, and the British people's financial resources and experience enable it to go still further with the development of a naval security system. The success which has already attended the British Government's modest initiatives should encourage it to continue this policy vigorously. Great Britain's superiority at sea and leadership among the naval Powers was not regarded unfavourably by the nations in the XIXth Century. British sea-power was a factor, perhaps the chief factor, in the general political security at that time. Its restoration may be similarly regarded and perhaps equally effectual, in the present age.

THE INFLUENCE OF AIRCRAFT ON LAND OPERATIONS

By MAJOR-GENERAL R. J. COLLINS, C.B., C.M.G., D.S.O.

On Wednesday, 23rd November, 1938

MARSHAL OF THE ROYAL AIR FORCE SIR EDWARD L. ELLINGTON, G.C.B., C.M.G., C.B.E., in the Chair.

The Chairman introduced the Lecturer.

LECTURE

AS another lecture will be given later on in the season on the work of Army Co-operation squadrons, I have been asked to confine my remarks to-day to what may be termed the major aspects of the problem of the influence of aircraft on land operations. And in dealing with these, I propose to concentrate more on the tactical than on the strategical side. Before I start, I would like to say that for the last four years I have been serving in India, in a part where aircraft are not very numerous. I feel, therefore, that the bulk of my audience probably know more about the subject than I do.

The ways in which aircraft might influence land operations can be grouped under five heads: *First*—attack pure and simple; *Second*—protection; that is, the protection of their own land forces from air attack; *Third*—transport; *Fourth*—supply; and *Fifth*—chemical warfare. To save time, and to avoid boring you with a large amount of data, certain examples of air operations under some of the above heads have been relegated to an appendix. I think that, with some definite examples before us of what has taken place, we shall be the better able to take a balanced view of the future. In each case I have tried to give you what I consider to have been the effect, i.e., the influence which aircraft may be judged to have had on the action.

You will notice that in dealing with the question of attack I have subdivided into four sub-heads, viz.: (1) attacks on land forces; (2) the provision of covering fire; (3) attacks on communications; and (4) attacks on headquarters.

For certain of the data given in these examples I am indebted to one or two articles which have appeared already in the JOURNAL of the Royal United Service Institution.

ATTACKS ON LAND FORCES

In the first instance, during our retreat in March, 1918, the point to which I would like to draw your attention is the number of aircraft employed, viz., one hundred. The German defence in the air was weak ; and the attack was made on the old Somme battlefield, which, owing to the destroyed area, formed something in the nature of a defile. The other point of interest is that some of our airmen taking part in the attack complained of great congestion in the air and extreme danger of collisions.

The second case is taken from Palestine, 1918. In this attack there were about seventy-five aircraft, and again you should note the presence of a defile. The effect was decisive and it is interesting to note that nine tons of bombs and some 5000 rounds of S.A.A. are said to have been used.

In the third case, in Macedonia, a smaller number of aircraft were engaged, but the effect was equally decisive. Again the troops were marching through a defile. Probably in neither of these two cases was there any form of anti-air defence.

The fourth case comes from Spain and is rather an interesting one, because it forms the first occasion that I have been able to trace in which a mechanized column has been attacked from the air. This was a rather hastily organized column and the troops composing it do not appear to have been highly trained. Its advance presented a very serious threat to Madrid, and in order to stop it the Government concentrated all the aircraft they could, one hundred and thirty in all, and the number of bombs and the amount of ammunition used was much greater. The operations lasted some days, and led to a decisive result. The advance was stopped, and after a short time the column withdrew in considerable confusion.

We now come to sub-head (2)—the provision of covering fire. I have again included a minor example from the last war—to remind you that even then, in small numbers, aircraft were being successfully used in this manner. The United States are studying this form of air action very closely and the Italians in Abyssinia relied on it largely—especially where the ground was unsuitable for the movement of field artillery. In Spain, of course, there have been numerous examples, particularly in the recent fighting on the River Ebro. In China similarly, aircraft have been extensively used, although it is very difficult to get any definite information as to the effect of their attacks. The defence, both in the air and on the ground, in all these cases was probably very weak or even non-existent.

ATTACKS ON COMMUNICATIONS

A third form of attack is on communications. In the last war you will recollect that bomb sights were inaccurate, bombs were small and not very effective—in fact, bombing was in its infancy. At the same time, abortive air attacks on one of the railway bridges, over which ran our last lateral line in April, 1918, caused our G.H.Q. much anxiety.

In Spain there is an interesting example in the recent Battle of the Ebro, where every attempt permanently to cut the bridges over the river by air action failed. Not only that, but the Government forces were able to build up reserves of food in the salient. It is reported that one girder bridge was actually destroyed, but not until fifty aircraft had dropped some sixty tons of bombs. Recently 1000 tons of bombs are reported to have been dropped during the final stage of the Ebro battle.

In China there has been continuous bombing of the Canton–Hankow Railway, but, with occasional short delays, traffic has been maintained on that line. The Japanese attacks do not appear to have been very scientifically carried out. A highly organized system of repair was instituted, which was just able to keep things going. In fact, it is doubtful if air forces have as yet mastered the technique of this form of attack.

Lastly, so far as attack is concerned, we come to the bombing of headquarters. During the Battle of Passchendaele in 1917 the fairly frequent bombing by night of the Fifth Army Headquarters put a severe strain on the staff, already working at high pressure. In March, 1918, at the commencement of the battle, one bomb had a decisive effect on one of our Corps Headquarters, putting it out of action for some considerable time at a critical moment. The most recent example that I could find in the Spanish Civil War was the landing operations at Majorca. A bomb was dropped on the Government Headquarters just at the crisis of the battle, and shortly after that it was decided to break off the operation and get away ; I cannot help thinking that the bomb had something to do with this decision.

LESSONS RELATING TO THE ATTACK

I would like, at this point, to try and put forward for consideration some lessons which may perhaps be deduced from these examples. My suggestions are as follows :—

(i) Once deployed, troops are not very vulnerable to air action, although continuous air attack is likely to wear them down ; prior to deployment, however, all land forces are very vulnerable.

(ii) Movement through defiles will be extremely dangerous.

(iii) Troops in retreat will be particularly vulnerable, since their anti-aircraft defence is likely to be weak and disorganized. Pursuit will be carried out more and more from the air in the future, and will be more effective than that on the ground.

(iv) Mobile anti-aircraft defence will in future be essential for all columns. Where columns have to pass through definite defiles, defence in the air may also be required, so great does the danger appear to be.

(v) Roads in permament use may have to have permanent anti-aircraft defences for their protection.

(vi) The great distance which can be covered by a mechanized column in one march complicates the anti-aircraft defence problem. Casualties to aircraft attacking such columns will therefore not be heavy. But once troops are deployed, casualties to attacking aircraft are likely to be severe.

(vii) Owing to the speed and range of modern aircraft and their costliness, it is probably uneconomic to use them for close support, unless owing to the nature of the ground it is impossible to get artillery forward in time. The advantage in so using them lies in the fact that surprise can be effected by concentrating aircraft quickly from a distance in a way which cannot be done with field artillery. Although possibly a misuse, their employment in this way should be studied and practiced more than is being done at present.

(viii) Well-timed attacks on headquarters will have great influence on operations and may even be decisive. From practical experience, I know well that the protection of nothing bigger than a Divisional Headquarters at war strength is an extremely difficult business.

As regards the influence of aircraft in their attack on communications, I do not think we have yet got adequate data on which to form a conclusion. The selection of the point of attack, the type of bomb to use and even the method of attack all apparently want considerable study. It is obvious that to cut a railway line, to destroy a bridge, or to block a road, say in a defile, will entail the use of a large number of aircraft, and, once made, the breach must be kept open. This is obviously going to be a dangerous affair for the aircraft so employed, because your anti-aircraft defence can be concentrated round the breach. But it will be dangerous to depend in future upon a single line of communication. Where there are alternative lines very carefully worked out schemes for switching from one to the other will be essential. The corollary may be a network of anti-aircraft defence over the whole

theatre of operations, and covering all essential lines of communication, both rail and road.

Lastly, amphibious operations, risky at any time, are going to be even more so in future. Aircraft attack on transports either approaching the coast or during disembarkation might be decisive. In the landing operations at Majorca a few aircraft sent over from Italy made the situation of the Government troops and their transports very precarious.

To turn to the second of my main headings—protection of our own land forces from air attack; it is obvious that counter-measures will have to be taken in the air. These may be in the form either of a fighter attack over the area to try and stop the actual bombing, or a counter-attack with bombers on the aerodromes which it is believed that the attacking aircraft are using. But speed in coming to a decision to counter-attack will be vital, if the land forces are to be saved. In providing this quick protection, it is obvious that there must be an extremely close liaison between the Commanders and Staffs of the respective land and air forces. Otherwise a large number of aircraft may be locked up and perhaps never be required.

TRANSPORTATION BY AIR

As regards transportation of troops by air the fourth example given in the Appendix (*vide* 5 (*d*)) is a particularly interesting one. Here Moorish troops were flown from North Africa to Spain. At that time General Franco had not got command of the sea, but had almost complete superiority in the air, and so was able to fly his troops across. They were said at one time to have flown some 600 over each day, and their maximum daily capacity was said to be 2500.

On the N.W. Frontier of India, all movement to and from Wana in 1937 had to be carried out for some time by air.

Lastly, there is an invaluable, though indirect, form of air assistance in the way in which serious casualties can now be rapidly conveyed from the front area direct to hospitals. That was being done on the N.W. Frontier for the first time last year, and has been done by the French for some time. It is safe to say, therefore, that as regards transportation the influence of aircraft will continue to increase.

The question of air security is of course paramount. Most of these feats of transportation have taken place in what might be called second-class theatres of war where there are few or no hostile aircraft, and very little anti-air defence. Of its value as regards the evacuation of casualties there is no doubt whatever.

There is a new form of influence on which I think one should touch,

viz., the use of parachutes. Started by the Russians some four years ago with picked troops—I remember General Wavell describing them as one of the finest bodies of men he had ever seen—the method has lately been developed by the Germans. Their parachute battalion has been rather in the limelight lately, and if it had come to war last September, it is quite possible that the battalion would have been used in the advance on Czecho-Slovakia. According to reports, when the battalion changed stations recently, one company landed on their new parade ground by parachute, a novel and interesting method of moving. Such troops can, of course, be used in small bodies for sabotage : in larger numbers they may be employed on demolition work, to attack a vital food or petrol supply depot, or even possibly to seize a vital point in rear of the opposing land forces, when a pursuit is being carried out. It is for consideration whether we should not begin now to study the use of such troops ourselves.

I come now to supply. The Italians are said to have transported 3500 tons in the air in Abyssinia in one year. A good deal of that was dropped by parachute. I do not think it is straining things too much to say that Marshal Badoglio would probably never have undertaken his daring advance on Addis Ababa unless he had realized to what extent he could rely on the air for supply. Therefore I think we can say that, in this case, the influence of aircraft was decisive. It saved the Italians a further year's campaign. This method of supply is a commonplace on the N.W. Frontier now, and in 1937–38 Wana was supplied by air for some time. Undoubtedly the influence of aircraft in this respect will increase. Perhaps it is too much to hope that it may be the solution of the transport problem on the N.W. Frontier, but every effort ought to be made to use aircraft there in order to reduce the interminable columns of camels and mules ; it might also be a means of increasing the mobility of troops in that difficult country.

CHEMICAL WARFARE

Last, but by no means least, we arrive at gas spray. Despite every effort legally to exclude this form of warfare from the next war, I think you can gauge the measure of success by the statement made, I think, only a week ago by Sir John Anderson that £5,000,000 worth of gas-masks had been issued to the civilian population in Great Britain. It is not always realized that a comparatively small number of aircraft can make an effective attack with gas-spray over a wide area. Defence is undoubtedly improving, but is still complicated, since it entails loading up the already overburdened soldier with special equipment and clothing, while a large amount of special material has got to be carried on lorries

within reach of the troops. Defence against repeated gas attacks is going to be a very difficult matter to cope with. In hot climates it has even more complications. Therefore I am afraid that this method of attack, however much we may wish to see it excluded, must remain a menace for the future; it is there in the background and can be used; whether it will be used or not, no one can forecast.

A GLIMPSE INTO THE FUTURE

I have endeavoured so far to give you some idea of where we have got to up to date as regards the capacity of aircraft to influence land operations. However rash it may be, I would now like to try and take a look at the future. The examples I have given you will, I hope, give you a basis from which to look forward. The influence of aircraft must depend largely upon the scale of any given war, i.e., whether it is of the first magnitude or in the nature of guerrilla warfare, when you have no idea whether the man you see in front of you is friend or foe. Outside Europe, political factors which bulk very large, especially in India, must inevitably limit the influence of aircraft. In so far as the greater includes the less, I am going to leave that aspect alone for lack of time and consider only the first-class war—what the situation might have been in fact only two months ago if things had not gone as they did. I propose to deal with it under three heads: firstly, the number of aircraft which are likely to be used; secondly, co-operation between the land and air forces; and thirdly, the efficiency of the defence, on the ground and in the air.

Firstly, as regards numbers. Let us hark back for the moment to the end of the last war, without which one might get an exaggerated picture. We disposed in 1918 on the Western Front of some 1200 aircraft—quite a considerable number. At a moment of crisis, one hundred were concentrated, if you remember in that first example, over the Somme to relieve the pressure of the German pursuit on our Fifth Army. The maximum number I have so far been able to trace is the one hundred and thirty which stopped the mechanized Spanish–Italian force. Well, two months ago what would the numbers have been supposing, let us say, the Germans had decided to concentrate their air forces for an attack on our land forces? Would it have been 500, 1000 or even 1500? No one knows. But the picture would have been a very different one from those we have been considering. There was, you will remember, congestion in the air with only one hundred aircraft concentrated over one area. Probably that problem will be solved by repeated attacks. You can have concentration in time as well as concentration in space. Anyway, we must expect heavier bombs and much more accurate bombing; in fact, a higher standard of skill all round.

The number of our own aircraft available to assist or protect our land forces is equally hard to forecast. For example, it must depend to a great extent upon whether an attack is to be expected on the Home Front. This is an obvious means of reducing the numbers available to help the Field Army. Our problem is, in fact, not an easy one. There is another rather novel development which came to notice in the last crisis ; that is the possible retention of land forces, say in London and in other big cities, to assist in keeping the roads clear, preventing panics, etc., as a result of hostile air attack. It is an influence, even if it is indirect, because it might easily affect the number of troops available for operations elsewhere.

CO-OPERATION BETWEEN THE SERVICES

My second factor is co-operation. It is of course a platititude to say that this will be dependent upon previous thought, study, training and practice, but I would commend to your notice in particular the last two—training and practice. I am one of the few people lucky enough in peace-time to have the honour of commanding a battalion of the Royal Air Force. Some ten years ago, I had the Experimental Mechanized Force under me, and I was also given command of a fighter squadron of the Royal Air Force. All I can say is, that having that squadron working daily with one, with a Wing-Commander to advise and a Squadron Leader attending all conferences and training exercises, the value in co-operation went up one hundred per cent. Obviously in future there must be a combined plan of operations, designed to make the best use of both Services. It cannot be rigidly preconceived and it must be capable of adaptation to a quickly changing war. It is not easy to appreciate the great flexibility of air forces ; at one moment our opponents may concentrate on the Home Front and a few hours later they may be attacking our field army. Command and control on our side have got to be capable of competing with such methods and at a similar speed.

Lastly, efficiency in defence—both in the air and on the ground. Defence in the air must, of course, be passive, and is therefore objectionable, obviously uneconomical, and may lead to the locking up of aircraft which in the end may not be wanted. But I feel sure you will agree that—with the numbers of aircraft now existing—in a war between two first-class powers, if one side decides to use the bulk of its aircraft for attack on the opposing land forces, the other side will be forced to conform. It will have, too, to conform very quickly or it will be too late. Secondly, on the ground ; here again things are developing at an extraordinary speed. About one-third of the Territorial Army has already been converted to anti-aircraft duties. What will the strength

of the anti-air defence have to be for even the smallest Expeditionary Force, if the deductions and the suggestions that I have put forward are accepted, viz., a network of A.A. defence for the lines of communication and bases, and almost continual defence of all columns in movement ?

Anti-aircraft weapons are going to complicate problems of ammunition supply ; anybody who has dealt with it in detail knows the difficulties. We may have three new types of ammunition which will have to be distributed at many points along all roads. The transport problems involved will not be easy of solution. Moving anti-aircraft units forward, too, when columns are on the road, especially if the roads are few, is a further complication. A high standard of staff work will be required. Looking at A.A. defence from the wider point of priority of supply of anti-aircraft guns and equipment, there are some thorny questions to be solved. For example, should the defence of the Home Front have priority over that of any Expeditionary Force despatched to the Continent ? Here we see the influence of aircraft reaching a very big scale. Sometimes I am inclined to think that the tail is going to wag the dog and that we may find ourselves with more anti-aircraft forces than fighting troops. In the case of a voluntary army like our own, in which the annual intake of recruits is limited, a balance between those allotted to aircraft defence and to the other arms may before long have to be struck.

CONCLUSIONS

To sum up. Mercifully we have not yet witnessed a war between two first-class Powers in Europe. One's conclusions, conjectures and suggestions can therefore but be tentative. Many that I have put forward to you to-day may be completely wrong. But, looking back over my life in the Service, I feel that I have too often failed to look far enough ahead. In any case I am personally convinced that, if we face facts, we must realize that the influence of aircraft is already much greater than it was in the last war, and is going to be greater still in future. Whether, if concentrated in large numbers at the right time and place, its effect is going to be decisive, no one can say. I am inclined to think that tactically it will be, but I do not feel that it has the power to force a final decision on the ground.

There are two sides to consider and to weigh in the balance. On the one, you have got an enormous increase in anti-aircraft guns, heavy machine guns and light automatics. Skill in their use is increasing too. On the other side of the balance we have got to face the fact that the numbers of aircraft are increasing enormously, and their capacity to do damage almost equally so. I am inclined to think that skill in defence is lagging behind skill in attack—with us at any rate—if not with the

Continental armies. To what extent it will ever catch up, or whether it will be able to solve the three-dimensional problem which is the outstanding difficulty of all anti-aircraft fire, I do not know. We have also got to consider what the casualties in the air will be in the opening phase of a war of this nature, and what the remaining morale of the opposing Air Forces will be.

As I see it—looking at it now purely from the point of view of the land forces—we suffer from two disadvantages in any contest: firstly, our two separate Services with their separate commands and systems of communications may lead to our being slow both in decision and in action compared with any nation which has unified control. Secondly, England offers so many vital targets to an opposing air force that, with the flexibility I have spoken of, it may be very difficult indeed for the Higher Command to decide in time when, where and how to use our own aircraft. But I feel sure that the more often and the more frankly the problem is discussed, particularly between the two Services, the more thought that is put into it and above all the more both Services can train and practice together in peace, the better it will be for both if it should come to war. Otherwise we may easily find ourselves unprepared and possibly found wanting in the day of battle.

DISCUSSION

General Sir Hubert Gough: One point in this admirable lecture which I think is very important and broad enough to have a general bearing on the problem is the various risks to which an army is exposed in war in its communications, its headquarters, its supply depots, and, incidentally, its actual line of battle; what is more, those risks are increasing. The only answer in my mind is to have a superior air force and anti-air defence on your side. Now, if we have superior air forces on our side, and, incidentally, a sufficient air defence, this means large numbers of anti-aircraft batteries. But the resources of all countries both in money and in men are limited, and in this country men, especially, are limited owing to the larger calls for our Navy and our Air Force than any other country. Therefore we can only have a limited land force. If a large proportion of the artillery is going to be anti-aircraft artillery, it will be practically no use whatever as artillery in battle to help the infantry forward. Therefore you have got to reduce the number of guns in what I might call the field artillery. If you reduce the field artillery you certainly should reduce the numbers of infantry, because infantry without thorough, complete and very heavy support from artillery are perfectly useless for purposes of attack, and not very powerful for defence; every lesson in the War taught us that we wanted artillery support. In fact, it seems to me that we are tending to come back to small but highly efficient armies with an increasing number of men in the air, and that the armies, if they are going to be effective, will have to be small. All these masses of troops which Continental armies are keeping up, far from being useful, will be nothing more than vulnerable air targets.

Squadron Leader I. O'B. MacGregor: I am afraid that I cannot agree with the last speaker. I presume that in the present situation, there may be a likelihood

of our being allied to France in opposition to the Rome-Berlin axis. If France, in the last War, with 4½ million British troops,[1] and a friendly Italy, could scarcely hold the Western Front, I do not think that she will be able to hold three fronts, including the Italian and perhaps the Spanish without aid on land. If the French Army " goes " on land, France " goes " on the sea and in the air too. I think that there is a lot of loose thinking about what Air Forces can do.

To come back to the lecture: General Collins was talking about bombing columns on roads. A road is a very difficult target to hit from any great height, but when you come low down—say to 2000 ft. or 1500 ft., it is comparatively easy. I understand that a heavy machine gun has been produced which fires a 1-lb. shell at about 120 rounds a minute, and which is actually hitting the towed target. This is quite novel as they were not hitting it before. I would suggest a use for these guns (which I understand are mobile)—that is, for the protection of large columns on roads. If the columns move as they do on the N.W. Frontier; by a system of picketing these anti-aircraft guns, aircraft are likely to be kept up to about 6000 ft. I have not seen this gun myself, but the picketing system might be practised when moving columns along roads.

COLONEL VON BECHTOLSHEIM: Will you allow me, as a guest in this country and as a guest of this Institution, to refer to one of the remarks of the distinguished lecturer. I am an officer of the German Army and German Military Attaché to this country, and the question of voluntary service in the German Army was mentioned in a way which might throw in the minds of somebody—I am sure it does not in the mind of the distinguished lecturer—a shadow on the morale of the German fighting forces. The position of voluntary service in the German Army or Air Force or Navy is that every German boy is able to select his own unit, his regiment; he is able to choose whether he wants to serve with the Air Force or with a special regiment in the Army or with the Navy; and just as we have now opened a selection of volunteers for a special parachute regiment, so it was always open for every young German to join the already existing regiments. If we look back ten years—we had a long-service army at that time on your model—we never had any difficulty at all in producing recruits and keeping the army up to strength; for every recruit we took in we had to reject about twenty or thirty perfectly suitable young fellows.

CADET LIEUTENANT MANDEVILLE ROE: At the Aldershot Command inter-divisional exercises at Saffron Walden last year, a number of anti-aircraft guns were placed in position for use as anti-tank guns. I was told by the battery commander on the spot that anti-aircraft guns of this pattern made very good anti-tank guns indeed. Does not this point the way towards the development of what one might call a universal pattern artillery weapon that might be employed for both ground and anti-aircraft purposes?

The other point which I should like to ask the Lecturer is what would he think was a suitable form of anti-aircraft defence in modern conditions for such a place as a brigade headquarters?

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[1] The maximum number of British Divisions on the Western front on 1st August, 1917—the highest figure reached during the War—was sixty-seven, composed of fifty-two British, ten Dominion, three British Cavalry and two Indian Cavalry Divisions.

The total British fighting man-power in the Western theatre on this date—also the highest recorded—amounted to 2,044,627 inclusive of Dominion and Indian Troops, but exclusive of Labour battalions and non-European labour units.

(*Statistics of the military effort of the British Empire*). EDITOR.

LIEUT.-COLONEL L. V. S. BLACKER: There is one matter that I should like to suggest to the lecturer, which is that in all his very interesting examples of what one might describe as local ground attacks from the air, a point that stands out is that all were made by aeroplanes primarily designed for other purposes, with bombs and guns and gun-sights also designed for other purposes, and used extempore for this task. I should be the last person to advocate such a shocking misuse of aircraft as I believe exists in the United States—the building of special " ground-strafing " machines; but I would suggest that there are many designers in this country who would be ready to tackle the problem of producing a ground " strafing " outfit—if one may be forgiven the expression—to be applied by Royal Air Force personnel themselves to more or less standard types. One can recall instances in 1918 of the creation of special types of aircraft, such as the " Salamander " and of bombs and bomb-sights for this local ground attack.

Then the other very interesting point which the lecturer brought out about the amazing flexibility of air forces and their high power of concentration reminds one of the fact that for 200 or 300 years before Napoleon there was field artillery, but Napoleon was the first commander—for instance at Austerlitz—to concentrate the whole of his artillery on to one target, with very surprising results.

LIEUT.-COLONEL C. E. PIERSON: Some years ago it was being asked whether a double-purpose weapon could be produced so as to relieve the gun situation, and the official answer was that such a suggestion was beyond practical politics. Since that answer was made I do not think I have myself heard the suggestion brought up again, except by a member of the audience just now.

THE LECTURER

The Lecturer, in replying, said: As regards the points raised, I have nothing to add to what Sir Hubert Gough said; I agree fully with his remarks.

As regards Squadron-Leader Macgregor's observations, a form of picketing by A.A. defence units is bound to come; I think it will be normal. The question that perplexes me is the number of anti-air defence weapons that you require to make a reasonable certainty of your protection. I think that, even then, when it comes to the passage of a defile, the Army will be entitled to ask for additional help in such way as the Air Force consider best. As to the value of the new form of weapon, I used the term " heavy machine-gun," but I meant the small automatic pom-pom. Being a new weapon one does not know its value, but it looks as if it might materially help the defence. Up to what height it would force attacking aircraft one does not know, but it may provide the link between the bullet and the shell between whose maximum and minimum effective ranges there was a considerable gap.

I am grateful to the German Military Attaché for his remarks. I would like to ask him if the German Air Force is normally on a voluntary basis?

COLONEL VON BECHTOLSHEIM: No. We have conscription for all the fighting services, but every individual is allowed to apply for the Army or for the Air Force or for the Navy.

THE LECTURER: I could not quite understand why this particular parachute battalion should have called for volunteers.

COLONEL VON BECHTOLSHEIM: It is a new unit, and the general public in Germany knew nothing about it. It has been mentioned in the papers because volunteers have been called out for the autumn of 1939. Everyone must apply one year before he is taken as a recruit.

THE LECTURER: If I may say so—and I am sure I am voicing the general opinion of those in this room—to land by parachute on your parade ground is an extraordinarily fine performance. I wish I had been there to see it.

As regards the dual-purpose gun, even although it were technically possible to produce it—and I understand that there would be very great difficulty in doing so—I have an uncomfortable feeling that it might be asked to deal with both targets simultaneously; if the attack was well planned, it undoubtedly would be. I think it is a misuse of either one or the other. In war both anti-tank defence and anti-aircraft defence will be one hundred per cent. jobs all the time.

The defence of brigade headquarters is another problem which I have studied in considerable detail. Brigade headquarters will, like divisional headquarters, obtain a certain amount of protection owing to its position within the area covered by the general lay-out of the anti-aircraft batteries. It will probably also be considered of sufficient importance to have some of the heavy machine guns allotted to it, or anyway to come within the heavy machine-gun defence of its own brigade area. But even with this there is a further problem and that is the protection of your personnel—getting them under cover; that is the difficulty, because at brigade headquarters the whole staff is employed practically day and night; it is extremely difficult to get any time to sleep, and certainly there will be no time to dig. So you must carry with you a certain number of diggers to provide the Brigade Staff with cover. Divisional headquarters may want as much as a company of infantry for this purpose, and protection of this nature may be required very quickly two or three times a day.

The question of special equipment, I am afraid, is a technical one which I am incapable of answering. Sir Edward Ellington may be able to give a reply. The difference of opinion is very interesting as regards close support aircraft. As you say, the Americans have gone in for them. I think their "flying fortress" is an example of what they are after, but that is a question that can be very well left to the higher authorities in the Royal Air Force. It must lead to locking up certain aircraft for a particular form of warfare, and although there is a big weight of opinion on the other side, I am still inclined to think that it is an uneconomic use of aircraft as they are to-day. If the attack on land forces develops to a very great extent we may have to follow suit; but I do not think that that time has come yet.

THE CHAIRMAN

I think you will agree with me that we have had a very informative lecture by Major-General Collins, and that there have been interesting points raised in the discussion. Before I ask you to give him a vote of thanks, I should like to remark on the question of the defence of armies by air against air attack; it is a very difficult problem. There is, however, one aspect of it which is comforting, and that is that the best defence against air attack, as you have often heard, is the counter-attack. Now, the counter-attack will be largely launched from the home aerodromes of the bombers, and in the future may be entirely launched from them. That counter-attack, which will be likely to be made on the enemy's aerodromes, their reserves, their ground organization and possibly their manufacturing capacity, will be equally effective to defend the home country as to defend the army overseas. It will not be a separate counter-attack for the purpose of defending the army; it will be a counter-attack launched for the defence of the home country as well.

The second point is the difficulty of providing local defence of aircraft when armies are in contact. As you probably know, it is practically impossible to use fighter aircraft from an economic point of view unless you can get some warning of

the air attack. That means to say that armies in contact will not be able to look to the air for local defence; they will have to depend on the anti-aircraft gun. Of course, the back areas, the supply organization, anything that is far enough from the point of contact for a reasonable time of warning to be given, can be given air protection; but with big armies in contact over a wide area it is, I think, practically impossible to provide for defence by aircraft. My own view is that you will not have operations on land until some sort of equilibrium has been reached in the air, and I think the next war is more likely to start with a struggle for air supremacy than by big battles between land forces.

The customary votes of thanks to the Lecturer and Chairman were carried by acclamation.

APPENDIX

Examples of Air Operations

(1) ATTACKS ON LAND FORCES

(*a*) *France: March*, 1918.—British 3rd and 5th Armies in retreat West, pursued by victorious German armies. About a hundred British aircraft were concentrated to relieve pressure. Orders were given for all risks to be taken. Weak German defence in the air, and that on the ground limited to small-arms fire. Old Somme battlefield forced German columns to stick to the few repaired roads, which were thus in nature of defiles. Airmen reported that congestion in the air over the objective was such that there was danger of collision.

There is no doubt that the effect was very great. Some hold that, without this relief, Amiens might have fallen.

(*b*) *Palestine: September*, 1918.—Turkish 7th Army in retreat East from Nablus. Some 75 British aircraft attacked columns in a defile, using 9 tons of bombs and some 5000 rounds of S.A.A. No defence in the air or on the ground. One hundred guns, 50 lorries and 1000 wagons were destroyed or abandoned and heavy casualties inflicted; the columns were disintegrated; the retreat became a rout. The effect was decisive.

(*c*) *Macedonia: September*, 1918.—11th Bulgarian Army in retreat North from the Vardar front. Some 40 British aircraft attacked in the Kosturino defile, using 3 tons of bombs and much S.A.A. No defence in the air or on the ground; 300 wagons were destroyed and indescribable confusion reigned. The effect was decisive.

(*d*) *Spain: March*, 1937.—A mechanized Nationalist force some 25,000 strong, in 2000 lorries, with tanks and artillery, advanced South-West on the Guadalajara road to outflank the Madrid defences. The weather was unfavourable for air operations. Roads were few. The quality of the troops was poor. Some 130 Government aircraft attacked repeatedly, using 11,000 bombs and 300,000 rounds of S.A.A. A.A. defence was weak, but on second day some 75 Nationalist aircraft came to the rescue. The result of the attack was that roads were blocked and troops scattered. The advance was stopped, and later the whole force was forced to withdraw. The effect was decisive.

(2) USE OF AIRCRAFT TO PROVIDE COVERING FIRE

(*a*) *France: 8th August*, 1918.—One British squadron was effectively employed to attack the German anti-tank guns, many being "blinded" by smoke bombs.

(*b*) *United States.*—The American Army is known to have studied and practised this use of aircraft, a special type of machine being designed for the purpose.

(*c*) *Abyssinia.*—The Italian Army relied largely on this form of support, probably owing to the difficulty of getting even mountain artillery forward.

(*d*) *Spain.*—There have been numerous examples on the Nationalist side,

particularly in the recent fighting on the River Ebro. The poor standard of training and weakness in artillery is no doubt partly the reason for the excessive use of aircraft in this way.

(*e*) *China.*—The Japanese have similarly made great use of aircraft for this purpose, probably for much the same reasons as the Italians in Abyssinia. Up to 100 aircraft are said to have been concentrated.

Defence both in the air and on the ground was in all these cases either weak or non-existent.

(3) ATTACKS ON COMMUNICATIONS

(*a*) *France : April*, 1918.—Repeated attempts to break a bridge on our last lateral railway line failed owing to insufficient aircraft, small bombs and inaccurate bombing. Nevertheless the Q.M.Gs staff were most anxious. A.A. artillery defence in those days was weak.

(*b*) *Spain : September*, 1938.—Battle of the Ebro. Almost continuous bombing by day of the pontoon bridges by Nationalist aircraft failed permanently to cut the Government line of supply to the salient. Repairs were effected by night, and five days reserve supplies actually transported over the river.

An iron girder bridge was destroyed after 50 bombers had dropped 60 tons of bombs. Defence both in the air and on the ground was weak.

(*c*) *China.*—Traffic on the Hong Kong–Canton and the Canton-Hankow railways was maintained—though admittedly often under great difficulties—despite continuous bombing, at any rate up to mid-October. No large numbers of aircraft have been used at any one time, but some 50 tons of bombs were dropped in three months. Defence in the air and from the ground has been either weak or non-existent.

(4) BOMBING OF HEADQUARTERS

(*a*) The frequent bombing by night of the 5th Army H.Q. during the third battle of Ypres tended to wear out the Staff, already overworked. It was calculated that one bomb, which failed to explode owing to a lucky accident, would have put out of action all the 2nd Grade staff officers on that H.Q.

(*b*) In France, on 25th March, 1918, a lucky bomb put one of our Corps H.Q. out of action for several hours at a critical time.

(*c*) *Majorca*, 1937.—It is probable that the bomb which destroyed the Government H.Q. at the crisis of the fighting was largely responsible for the decision to re-embark, and so for the failure of the operations.

(5) TRANSPORTATION OF TROOPS

(*a*) *Egypt : July*, 1932.—One of the earlier examples of the transport of troops by air was the movement of one British battalion from Cairo to Baghdad. There were nine aircraft with no great capacity, and it took five days to transport 500 men.

(*b*) *Abyssinia :* 1936.—The Italians are said to have carried 10,000 men by air in one year.

(*c*) *Austria :* 1937.—The Germans flew 1000 men to Vienna. They are said to have used four flights, the operation being quickly and efficiently carried out.

(*d*) *Spain :* 1937.—Some 600 Moorish troops were flown daily across the Straits of Gibraltar. This is an interesting example of how control of air communications neutralized lack of control of sea communications. The maximum daily capacity was said to be 2500 men.

(*e*) *India :* 1937–38.—On the Frontier, when the tribesmen temporarily closed the road, all movement to and from Wana was carried out by air.

(*f*) Several nations—the French in particular—have been using aircraft for the quick evacuation of casualties for some years.

FIRE SUPPORT FROM THE AIR

By MAJOR F. JEBENS, The South Lancashire Regiment
(The Prince of Wales's Volunteers)

IN his article on "Fire Support from the Air," [1] Colonel Everett seems to have dismissed very lightly the difficulties involved in his suggestions. The value of such support is undeniable, but it is only by carefully considering the difficulties that we can hope to arrive at a practical conclusion. The following are a few of the problems :—

1. *The design of the aeroplane.*

A free view for the pilot to his front is essential. This limits our choice to two types :—

(*a*) The twin-engined monoplane with engines mounted in the wings. This type would offer too large a target and has the grave disadvantage of losing a great deal of its power of manœuvre in the event of one of its engines being put out of action. At the height at which the aircraft will have to work such a disability would almost certainly prove fatal and would greatly endanger other aircraft of its formation.

(*b*) The high wing "pusher" monoplane. This seems to be the only type which would fulfil the role. A single engine would have to be mounted centrally on the wing. A larger and much more powerful "Drone" is envisaged.

2. *The appearance which the ground will present to the pilot.*

Anyone who has looked at the ground by the side of a car travelling at 30 to 40 m.p.h. will have some slight idea of the appearance it will present to a pilot flying at least 120 m.p.h. at a height of 200 feet or less. In order to see anything other than a blur he will have to look a considerable distance ahead, say 300 or 400 yards. In these circumstances he should not have much difficulty in seeing and engaging a line of trenches of the "position" warfare type. But we must remember that during the mobile warfare envisaged at the beginning of the next war, or in the later stages of a successful attack, troops will be "distributed in depth according to the accidents of the ground." There may be no well-defined line of trenches, and it is very doubtful

[1] See JOURNAL for August, 1938, p.587.

whether, at the height and speed contemplated, the pilot will be able to see and engage any but the least well concealed localities.

3. *The effect of machine-gun fire at 120 m.p.h. and a height of 200 feet or less.*

We will assume that the aircraft has four machine guns mounted below the wings and synchronized so that their cones of fire meet 300 or 400 yards ahead of the aeroplane and, roughly, at ground level. It must be remembered that, in firing guns so mounted, it is the aircraft and not the gun which is sighted on the target. The latter, as already mentioned, is likely to consist of short lengths of trench dotted about the landscape, and in order to engage these the aircraft will have to fly a very irregular course if its fire is to be effective. In theory, provided that the guns are mounted co-axially with the aeroplane, a turn should have no effect on their fire. But directly we have them synchronized below the axis of the aeroplane their cone of fire will swing as the machine turns. Further, during a turn at speed, centrifugal force gives an aeroplane a certain degree of outward " slip." Both these factors will tend greatly to diminish the efficacy of machine-gun fire. Moreover, one is apt to exaggerate the material effect of such fire from the air. If we take the ideal case of an aircraft flying above a perfectly straight road at 120 m.p.h., what do we find ? The four guns will produce say 1000 rounds per minute. In that time the aeroplane will have travelled two miles. This gives us a density of fire of one bullet per 3.5 yards.

We therefore conclude that the effect of machine-gun fire from a single-seater aircraft " jinking " along a " foremost line of defended localities " will not be very great. What of a two-seater ? If we can arrange for the gunner's cockpit to be in front of and slightly below that of the pilot, then he would have an excellent field of fire. But he will only be firing one or at the most twin guns. It is also doubtful whether, at the height and speed envisaged, the gunner will be able to guide the pilot towards his targets before the latter have dropped behind his field of fire. Another argument against a two-seater is that " ground strafing " is too exciting ! This may seem to be a flippant remark, but the writer knows from personal experience that there is a distinct tendency for youthful pilots, in moments of excitement, to forget or neglect their gunners and fight the battle themselves.

4. *" Hedge hopping " in formation.*

So far we have considered only the single aeroplane. What if we employ the large numbers envisaged by Colonel Everett ?

Here again it is the nature of the target which presents difficulties. If collisions are to be avoided and control is to be maintained, the

machines must fly in formation. " Line ahead " would enable them to follow their leader and engage roughly the same targets. But if the attack be made against well-disciplined troops of good morale, armed with A/A small arms, the odds against the survival of any aircraft after the second would be very long. If the formation be the normal V, it is true that a barrage of machine-gun fire will be produced. This barrage will, however, move in accordance with the path of the controlling machine and its effect on troops occupying " accidents of the ground " is very problematical.

We conclude, therefore, that covering fire produced by the machine guns of aeroplanes against troops in defended positions is of very little value and not worth the casualties involved.

5. *The difficulties of low altitude bombing.*

Bombing, even at the low altitude envisaged by Colonel Everett, is not quite the simple operation which those who have never flown sometimes think. When we remember the size and nature of the targets which are likely to be presented by the enemy, it will be evident that the mere wholesale scattering of bombs among the enemy's posts will be waste of ammunition, since the author has ruled out dive bombing. Bombs will have to be directed by bomb sight and, as in the case of a rifle, in order to obtain accuracy the " sights must be upright," that is, the aeroplane must be flying on an even keel. Since an aeroplane has to " bank " in order to turn, it follows that it will have to be flown straight from the time that the pilot decides on his target until the release of the bomb. If we allow a minimum of three seconds for this operation the aeroplane will have travelled 180 yards. It will therefore be seen that it will not be possible to drop ten bombs in a mile of front.

The density of the bombardment can and will, of course, be increased by employing numbers of aircraft, though here again, since dive bombing is ruled out, difficulty arises. A 100-lb. bomb, as suggested by Colonel Everett, contains more explosive than a 100-lb. shell, i.e. the shell fired by a 6-in. howitzer or gun. The effective radius of its explosion is considerable. If we drop these projectiles from about 200 feet when flying in large formations, it is almost inconceivable that, even with delayed action fuses, a number of aircraft will not be in great danger. We must, therefore, be content with much smaller and less effective bombs and even in their case there remains the danger that they may be exploded by S.A. fire before release.

Thus, the conclusion must be that " hedge hopping " attacks by aeroplanes on troops in a defensive position will not be sufficiently effective to warrant the design of special aeroplanes for the purpose or

to offset the tremendous losses in personnel and material which they entail.

Alternative Proposals

Turning now from destructive to constructive criticism, let us see whether the air arm cannot support attacks to a greater extent than is at present suggested by the text-books.

Events in Abyssinia and Spain have proved that diving attacks on front line troops with bombs and machine guns are, on occasions, successful even to an overwhelming degree. Before, however, accepting such action as the normal function of the air arm, it is as well to remember that it is only the successes that have received widespread publicity. The failures have not been recorded. Moreover, when circumstances are studied it appears that certain factors are common to all decisive attacks both in Abyssinia and in Spain. The air superiority of the attacker has been overwhelming. The enemy ground troops have possessed few or no A/A weapons, and their morale has, in most cases, already been shaken by the action of the other arms. Thus it will be wiser to assume that a commander will be justified in launching an air attack against troops holding a defensive position only when at least one of these factors is present. This does not get us much further. So let us examine the tasks of artillery in the attack to discover whether any of its duties can be relegated to the air arm. They are (F.S.R., II, 1935, 5, 6) :—

(*a*) Artillery Preparation.

(*b*) Covering Fire.

The targets engaged in carrying out these tasks are mostly within the area of the forward battalions of the defence, and normally not suitable for attack by the air arm as already explained.

(*c*) Counter-battery Fire.

(*d*) Harassing Fire.

This seems much more hopeful. The targets involved are some distance behind the enemy's lines and apparently suitable for aerial attack by diving. Moreover, if we can leave them to the Royal Air Force, a number of the longer range artillery weapons will be freed. These may be employed in covering the attack beyond the original belt of covering fire from the original battery positions. Here we seem to have at any rate a partial solution to our problem, provided that we can make this a normal function of the Royal Air Force. So let us go further into the matter.

The object of the R.A.F. component with the Army is to assist the latter. In order to do this, it carries out certain duties of tactical

reconnaissance and artillery observation which are indispensable. Owing to their numbers, the squadrons thus engaged will seldom be available for other tasks. In order to ensure that Army Co-operation squadrons can work unmolested, Fighter squadrons are employed to gain and maintain air superiority. This needs constant patrolling and fighting because air forces, owing to the speed of construction and the range and speed of the machines, have great powers of rapid recuperation. Consequently it will be seldom, and then only for short periods, that fighter squadrons may be taken from their normal duties and used for attacking ground targets. Only when we possess more fighter squadrons than are necessary to ensure and maintain air superiority, will we have squadrons available to employ normally in giving covering fire to the attack.

Conclusion

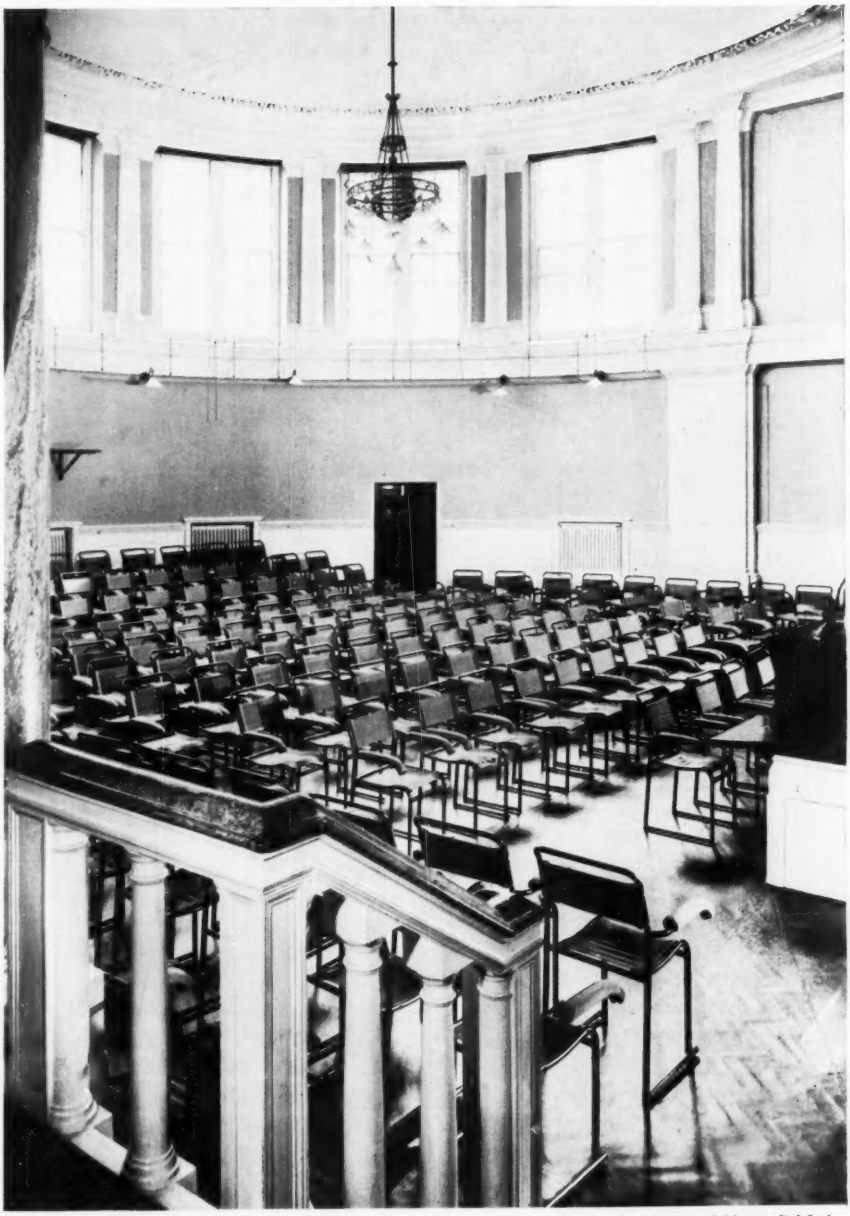
To sum up we have concluded that :—

(1) " Hedge hopping " attacks against ground defences by specially designed aircraft are more likely to be costly than effective.

(2) Diving attacks on ground targets by fighter and army co-operation aircraft are possible under exceptional circumstances.

(3) Attacks on ground targets in order to release artillery for other duties are only possible when sufficient squadrons exist to provide a surplus after ensuring air superiority.

(4) Until the Royal Air Force has attained a decisive superiority over any possible enemy air force, we will have to rely normally on the Royal Artillery and the Royal Tank Corps to maintain the momentum of our attacks.



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THE LECTURE THEATRE OF THE ROYAL UNITED SERVICE INSTITUTION
RE-SEATED AND RE-DECORATED

THE SPANISH CIVIL WAR

By WING-COMMANDER A. W. H. JAMES, M.C., M.P.

On Wednesday, 9th November, 1938, at 3 p.m.

MAJOR-GENERAL L. CARR, D.S.O., O.B.E., in the Chair.

THE CHAIRMAN, on introducing the Lecturer, said that probably there was no one better fitted to speak on this subject. Wing-Commander James had made a great many visits to Spain since the outbreak of the Civil War, and had probably been given more favourable opportunities than anyone else for actually seeing the battle front and observing the course of the operations; in fact, he could truthfully be described as an eye-witness.

LECTURE

I AM going first of all to try to indicate to you what I believe to be the essential background to be grasped by anyone who wishes to understand the course and the nature of the Civil War in Spain. You must remember that, all through history, both Spanish wars and the Spanish character have been utterly unlike anything else in Europe. As my authority for that statement I would claim the support of the authors who wrote about Spanish wars before the days of propaganda: read Washington Irving, who quotes what he calls the Monkish Chroniclers of the XVth Century; read Macaulay's essay on the War of the Spanish Succession; read Napier; above all, read Henningson and O'Shea on the first and second Carlist Wars; and, for straight history, read Martin Hume's standard short Spanish History, published, I think, in 1900. The same characteristics are brought out and emphasized in different ways in every one of those books. Indeed, as I have said before and say again now, if I had the time, the industry, and the inclination, I could describe the present Civil War in Spain from first to last almost entirely by quotations from British authors writing about previous Spanish wars. Even what he calls "the great British policy of non-intervention" occurs in O'Shea's book of the 1870's.

You must also remember the racial background. Following five hundred years of Roman rule, which lasted until A.D. 400, there were three hundred years of Visigoth domination, a period of continuous civil war and a period in which there filtered into Spain from the North a very large volume of what in the jargon of to-day is called Nordic blood,

which has persisted racially in the North of Spain, as witness the superb natural fighters, the Navarrese. Then there were eight hundred years of Moorish domination, from 710, after the Visigoth kingdom was overthrown, to 1492, when Granada was captured and the climax was reached of that long drawn out war under Ferdinand and Isabella, which drove the Moorish power, but not the Moors, out of Spain. There were therefore those two great blood streams—the Visigoth blood in the North and the Moorish blood in the South, and that, I believe, to some extent accounts for the clash of sympathy, of outlook and of mental process, between the North and South to this day. Then there is the important historical background of inefficient over-centralization under, and following, Ferdinand and Isabella, in a country with appallingly bad communications.

We also have to remember the continuous and violent political strife of the XIXth Century. Many people in this country, particularly among the general mass of sympathisers with one side or the other, assume that the " Popular Front " Government, which is still fighting for its life, was the first attempt to introduce progressive or democratic government in the Spanish Peninsula, but that is not the case. From 1812, the date of the Constitution of Cadiz—a utopian dream inspired by the French Revolution—all through the XIXth Century, there were violent swings of the political pendulum in Spain. There were two abdications—the abdication of Isabella in 1868 and the abdication of Amadeo in 1873. There was the first Republic, from 1873 to 1875, in which there were no less than five Presidents : and there were in that same period no less than three major wars : the Peninsular War, lasting five years, the first Carlist War, lasting for about six years from 1833, and the second Carlist War, lasting for about four years from 1872. I say " about " because these wars tended to drag on even after the main operations were over, and it is very difficult to say when they ended. Following Hume's standard history, I would remind you that between 1812 and 1875 there were no less than twelve main violent swings of the political pendulum from one extreme to the other, and in the same period there were no less than five military *pronunciamentos*, when the army overturned the Government of the day. It is curious to note that in these *pronunciamentos* the Army leant to the side of the Left, not of the Right.

All through that history we see standing out certain characteristics, which still obtain and which influence the present war, the chief of which is the utter inability of the Spaniard to compromise or to see his opponent's point of view. It seems to me that such a history of wars over hundreds of years, and of civil wars in the Peninsula in the last

century, must have had some influence on the character of the population.

Then I come, in this over-epitomized survey, to the second Republic, 1931 to 1936, which followed the dictatorship of Primo de Rivera from 1923 to 1930; he gave Spain probably the only period of reasonably efficient and liberal government that she has ever had. If you read the history of the first Republic, from 1873 to 1875, you will notice how often history repeated itself under the second Republic. I do not want to let my political sympathies obtrude, but I would submit that the period of the second Republic, like the period of the first Republic, showed a certain decay of authority, a certain decrease in security, and a very certain increase in bitterness. There were, of course, Communist intrigues and aspirations, and, as a reaction, there were certain Fascist intrigues and aspirations. But I believe that both were incidental, that they have both been enormously exaggerated by the respective sides for propaganda purposes, and that before the present Civil War broke out there were quite enough indigenous elements in the Peninsula, history repeating itself, to account for most of what has happened since. The line-up in this war is very like the line-up in the first and second Carlist Wars; in fact, I believe that, if it had not been for the existence of Communism and Fascism to obscure the issues, people would realize that the present war is in essence the third Carlist War.

I pass to a brief note about the Spanish army of 1935, the year before the outbreak, and I take the figures from an impartial source, the League of Nations Armaments Year Book. In 1935 the establishment of the Spanish army is given as 154,757, of which in round figures 75,000 were the professional cadres, the balance being the annual intake in two batches of the year's recruits. There was also an establishment of 8,000 Moors, and there were some minor garrisons in the Canaries and the Balearics. The army was organized into eight Divisional areas, plus the Asturian command established after the Asturian outbreak in 1934, which, for the purpose of argument, we may count as a ninth Divisional area, so that there were nine territorial Divisional areas. There was one Cavalry Division, split up as divisional cavalry. There was a flying corps of about 130 aircraft. Only those with experience can appreciate how utterly misleading it is to refer to numbers of aircraft without reference to the state they were in or what the personnel was. There were also, distributed through the rank and file of the population, on the basis of the statutory eighteen years of reserve service, something like 800,000 effective men who had some kind of military training. The course of this campaign has been very much influenced by the fact that the Spanish army had active experience of war in the seven Riff

campaigns between 1920 and 1926; every Army enters a campaign influenced by its own most recent experience.

Lastly, before I come to the actual war itself, I should like to give you a very brief note about the geographical and economic background against which this war is being fought. You must remember that Spain is a large, rugged, sparsely inhabited country, with more than double the area of Great Britain and Northern Ireland and only just over half the population of those countries. Spain is a country in which one is rarely out of sight of considerable mountains, has a very hard climate—very hot in summer and bitterly cold in many places in winter, and a tendency to be waterless, which affects the movements of troops very much indeed. Spain is a financially poor country, with very small imports and exports. The last pre-war figures were roughly two-thirds of those of the Irish Free State. As always in Spanish history, directly trouble occurs centrifugal force operates and there is a tendency to separatism by the Catalans in the North-East and by the Basques in the North-West.

THE OUTBREAK OF WAR

The outbreak occurred on the 17th July, 1936, and it is, I submit, completely wrong to think of it as being an efficiently organized, spontaneous, plain rising of *the* army against *the* people. In fact, taking the nine military Divisional centres, in the three largest of them—Madrid, Barcelona and Valencia—the outbreak was either completely abortive or so partial as to have been easily suppressed; in three others it was a very limited success; for example, in Saragossa, where the infantry supported the Government, the cavalry under Monasterio supported the Generals; and, taking the remaining three, in only two of them was the outbreak a complete success, because in the third, Oviedo, General Aranda's forces were surrounded and cut off for a long time. I think we should visualize the first few months of the war as a period of chaos almost everywhere; nobody really knew what was happening round the corner. Bodies of sympathizers tended to coalesce, and the actual line-up occurred largely on the natural historic geographico-political lines. The war fell into two parts in the first two months, and emphasis has been laid in this country on perhaps the less important one. There was the rising based on Morocco in the South, centering on Seville, which you know about, because you have all remembered the rather dramatic march from Seville to Madrid, but the other part of the war, I think, was the decisive factor, that is, the rising in the North, in Navarre, of the Carlists, the *Requettis*—the old traditionalists, the finest fighting men in Spain. The conservative Catholic

peasantry rose spontaneously and flocked to the standard of General Mola, the local insurgent leader.

The first major military operation, as I believe, was the march to the West of the *Requettis*; the whole countryside rose, as it had risen in both the Carlist Wars, and I believe the first event to which history will assign major military importance was the fall of Torlosa; that was the first city that the Insurgents captured completely. Thence they moved West and took Irun, right on the frontier, on 4th September and secured San Sebastian on 13th September These successes gave them two harbours, and cleared the road into France. I believe that military movement from East to West really decided the fate of the campaign in its first days. There was also the marching in the South, where a very slender force, under 3000 by all accounts, reached Madrid on 7th November, from Seville. If they had not turned aside to relieve Toledo, I think they would have taken Madrid also. The very day that this attenuated column, outrunning its supplies and very lightly armed, reached the outskirts of Madrid the first " Brigade " of the International Force, a strong body of international fighters, met them and stopped them. The first decisive battle of the war, in that it might have decided the outcome there and then, was the successful defence of Madrid by the international columns under an intriguing gentleman called General Kleber, whose real nationality and antecedents are wrapped in mystery; he speaks with a strong Canadian accent and has a sense of humour.

After the campaign in the North and the following pause, and the campaign in the South and the following pause, there occurred an event not very dissimilar from that which we experienced in October–November, 1914, as lines were gradually formed right across the Peninsula upon two fronts. The northern front had a length of approximately 400 miles, and the other front a length of over 1200 miles. Think what that meant in holding a line, and imagine what sort of line was, and has been, in fact held.

The next military operation was the capture of Malaga, which was taken on the 8th February. Some people said: " Why did not they go on from there up the coast ? " I believe the answer to that is that it is most appalling country, with a very bad climate indeed. Anyone who has read Borrow's *Bible in Spain* may remember his description of the climate of the country round Almeria: it is waterless, inhospitable and has the worst climate in Europe.

THE NORTHERN FRONT

After the capture of Malaga there occurred the reduction of the North front, an operation which lasted from the beginning of March

until the 21st October, 1937. I visited the northern front once during the operation and also just after its conclusion. That war approximated somewhat remotely to our recollections of the European War. I wish to emphasize that on each of my visits to Spain I have been struck by the complete difference of the character of the war there from the character of the late war, and I realize how misleading it is to describe it in the jargon that we used in the World War. The strategic operations on the northern front consisted of a series of outflanking movements. There was, I believe, practically no assault in the ordinary sense of the word. It was a war of well-planned infiltration, great advantages lying with the attackers, the Nationalists. Firstly, they had the Navarrese troops, of great mobility, lightly equipped, and first-class natural hill fighters, directed by men who had experienced the Riff wars. Secondly, the Nationalists had, of course, an overwhelming preponderance of fire power, both in artillery and in the air. That does not mean that they had anything that we should have regarded as great fire power, but, in the sketchily armed, hastily raised militia, which was all that either side really was in those days, the effect of even one battery of guns or one aeroplane dropping a few bombs was out of all proportion to what it would be with regular and experienced troops. For example, I examined with great care on two occasions two so-called " Iron Lines " of Bilbao. These were indeed well sited and reasonably formidable works on ground that lent itself admirably to defence. We were told by the journalists who reported the operations—I was not there, so I am not criticising them—that the Insurgents blasted their way through with an enormous superiority of fire power. No doubt that is true, but in the particular part of the line where the main column of the attackers broke through I spent half a day examining the ground, and, although it was fairly heavily pockmarked with shell holes, on a front of about 600 yards, I did not find a single direct hit on a trench. But the shelling and air bombing was enough to have been extremely unpleasant and damaging to the morale.

The place in the North where the most ferocious fighting took place —and owing to the extreme bravery of the Spanish people, it was really ferocious—was Oviedo, which was completely surrounded and besieged for the first three months. The neighbouring garrison at Gijon had been overwhelmed and destroyed, and that at Trubia did not rise. General Aranda, the divisional commander, holding a perimeter of about nine miles, with a force of some 700 civil guards and about 600 soldiers, supported by a civilian levy, put up a really remarkable defence against an enormous number of attackers. There, for the first time in the Spanish Civil War, I saw trench systems that approximated to our systems of 1915, by which I mean that the defenders " went down like moles instead of

building up like beavers." In saying that I am quoting from O'Shea's description of trench construction in the war of 1873 in the same area. Oviedo was knocked about like a town in Flanders during the Great War; and it takes a great deal more to knock a Spanish town about than a Flemish town, because Spanish towns are much more solidly built. In the operations leading up to the relief of Oviedo, mule batteries were used in the mountains, and I saw evidence of some extremely good close-range shooting by the Nationalists.

The end of that phase of the war—and this, I think, is interesting in view of what might happen some day elsewhere—did not consist of an army defeated in the field; there was no Sedan; it consisted in the disintegration of the defenders. According to General Aranda—I was with him for a day during the operations and he explained the situation to me—the army just disappeared or melted away when the end came and the leaders had fled. But remember you must not visualize an army fully equipped with uniforms and so forth; probably half the men had not one item of military outfit in the way of uniform. At the end, they simply threw away their Sam Browne belts, their rifles, their tunics, or whatever it might be, and became civilians.

TWO MAJOR DIVERSIONS

While the northern front was being attacked, two major diversions were attempted by the Republicans. They attacked a place called Brunette, a little village outside Madrid, and later on they attacked near Belchite. The first fierce open fighting of the war occurred, I believe, at Brunette. The attack was made on a relatively small front, and it was facilitated, as always in Spain hitherto, by the contempt for defence shown by the Nationalists. Some months before I had been in front of Madrid; I had been taken up, as usual, in a car to the trenches and got out perhaps seventy yards from the front line, behind a house. I ventured to remark to the local company commander that had one been there oneself without any reserve or switch lines at all, one would have felt most uncomfortable. His answer was: "We are on the offensive." The ground at Brunette was retaken, but there were a great many casualties on both sides. Belchite was a bigger success for the Republicans, and they held the ground for much longer, but they attempted only those two comparatively minor tactical offensives to relieve pressure on the northern front, and history will tell us why. It seems to me that the probability was that they did not realize what they were up against, and that there still was that extraordinary disunity, chaos and overconfidence which I had the opportunity of observing in Madrid and Barcelona in November, 1936. Apropos of Brunette and Belchite, I

would remind you that, owing to the enormous length of line held by 500,000 or 600,000 men, and owing to the comparative scarcity of mass of manœuvre and the scanty communications on both sides, either side can practically always depend upon a surprise attack being initially successful. The lack of training of the soldiers and the lack of communications and transport, however, make that success extraordinarily hard to exploit.

THE OFFENSIVE IN ARAGON

Coming now to the Aragon offensive, I was fortunate enough to be able to visit that front at the end of March last year, just before the attack began, to look at the line. I was allowed to go anywhere I liked, and I chose places which I thought most likely to be interesting. At one spot I found the lines were about three kilometres apart. The sector on the Nationalist side consisted of a series of perimeter posts crowning a ridge of low hills. They had advanced to that line a short time before—an advance of about seven kilometres on a front of about fifteen kilometres; at that time ground did not very much matter. Again I saw, here and elsewhere, that contempt for defence which has cost the Nationalists so much at different times. A striking example of their contempt for defence costing them dear was the capture by the Republicans of Teruel in December, 1937.

The opening phase of the battle of the Ebro was the recapture of Teruel on the 22nd February. Teruel was in the apex of a long salient. The Republican operation, as disclosed by the event, was an attack on a fairly limited scale. They set the arms of the pincers a very short way up the sides of the salient; evidently they were not very confident as to what they could hope to achieve. When they got Teruel they had secured an important but limited tactical success. Then Spanish pride, the hatred of giving ground, asserted itself, and hammer and tongs the Nationalists set to work to recapture Teruel. At the time it looked like faulty strategy, because their plans were laid at that time for the main offensive to come North of Saragossa, between Saragossa and Huesca—that is the inference I have drawn from looking at the ground and talking to many people—but they attacked Teruel and retook it, after terrific suffering on both sides, much of the fighting taking place in snow and under appalling conditions. Again, I salute Spanish bravery. The superiority of fire power, equipment and training of the Nationalists were the main factors, but in the final operation the success rested with the Cavalry Division. It is hardly fashionable to mention it in this country just now, but the fact remains that cavalry have been *the* successful arm of the current war in Spain. One does not see many tanks there; nor are they highly thought of. The final recapture of

Teruel was based on an outflanking movement to the North, in the Sierra, by a cavalry division. Then a very interesting thing happened. General Aranda, a very fine fighting General, was told to clear the ground to the North, and as I believe—I may be wrong in this conjecture —to clear the hills and secure the safety of the salient, after which it was intended to resume the offensive near Saragossa. But when General Aranda pushed into the Sierra North of Teruel he met with far less resistance than he had anticipated. Something occurred perhaps analogous to what happened to the Germans on the Lys in 1918, when—in what was expected to be an attack with a limited objective—the line gave way and they poured through. So that, instead of the battle of the Ebro starting to the North of the river, it started to the South of the river, and it went very fast indeed and overran Belchite. Thus came about the curious position that the Republican line to the North, astride the front of Huesca, held, while the line to the South gave way, and the River Ebro demarkated an exposed flank. The Republicans to the North of the river had their left flank in the air. The Nationalists had pushed on for many miles South of the river, but not on the North side.

Then two moves were made : an attack was launched on the Huesca front which met with very stiff resistance, and a very striking and dramatic operation was carried out in the crossing of the Ebro at Quinto, a place about eight miles behind the left flank of the Republicans, which was 'in the air.' I was fortunate enough to be in Saragossa at the time and to watch that crossing. Two companies of Spanish (Navarrese) Sappers brought up by night metal pontoons on lorries ; a place had been selected where there was a loop in the river, with the apex of the loop towards the South ; they ferried across a few men, who found the other bank unguarded, and they put two pontoon bridges across. The pontoon on which I crossed was about 160 yards long and was carried on twenty-seven boats. When I arrived, the first brigade had just crossed, and was still being held up on its right by machine guns from some houses. I went down a sunken road towards the river bank with the second brigade that was going to cross, and was greatly impressed by the morale of the troops. These men were singing and laughing and did not seem to mind their position at all, although they were going to push across a bridge in the face of an enemy still resisting. Within 500 yards they could hear machine guns rattling. The crossing was supported by three or four field batteries, two small long-range guns and one battery of anti-aircraft guns shooting horizontally when, as on one or two occasions, ground targets presented themselves. Having crossed the Ebro, the Nationalist forces marched North and East meeting with no resistance until they reached the Cinca River. Thus outflanked, the hitherto stiff resistance North of the Ebro collapsed and the northern

Corps was able to advance rapidly over the Segre River, which gave them the important power stations at Tremp, which they still hold. From the reservoirs, one can see the lines on the hillsides about three or four miles away.

The battle of the Ebro started from a base line of about 150 miles long from about four miles North of Huesca to Teruel, and by about 26th March the front had been expanded into a bulged line of about 260 miles.

THE BREAK THROUGH TO THE SEA

The next phase was the break-through to the Mediterranean, South of the Ebro. There was some long marching, through mountainous country and very stiff fighting. I will give you a vignette of the crossing of the Guadaloupe, a southern affluent of the Ebro, which I witnessed on 26th March. It was the most perfect battle lay-out for the spectator; I got into a rifle pit on the forward edge of a precipitous hill about seven or eight hundred yards above the river that was to be crossed. The furthest mountain horizon from me was five miles away, and I could see the whole panorama spread out in the deep valley before me. I watched the troops advancing, not in lines and waves, but in groups behind the red and gold standards of the Nationalists. Behind each group followed pack mules. It was interesting to watch the unavailing efforts the men made to get a mule to walk faster with a machine gun shooting at it. I saw single-seater fighters, flown by young Spaniards, doing " ground strafing " with amazing gallantry. They dived so low that the machine and its shadow merged together into the ground on the target. I saw one shot down. A " chain " of five was diving and shooting, when the third one in the " chain " was shot down and crashed into the ground, but the others went on for ten minutes, flying just as low against the same position. The cavalry were a picturesque feature. I could see cavalry squadrons moving across the open on the right. There were tanks and pontoons; a counter-attack developed from some olive groves and withered under field-gun fire; the whole panorama of battle was laid out in front of me. One striking feature is what are called advance command posts. The system is for the G.O.C. to go forward during the battle and occupy positions which strike one as being extremely rash; but the Generals are chiefly young men. The mountainous country facilitates direct observation. I was told a story of General Franco which I like and which seems to ring true, that on one occasion he was advised to put some distinguished old General in an important but exposed position and he refused, saying: " No, I will put young Major So-and-so there, because when I go to bed at night I like to be able to sleep."

THE ADVANCE ON SAGUNTO

After reaching the coast, General Aranda turned South and pursued the same tactics—he told me this himself—that he had found successful in the northern campaign the year before. Here there is a comparatively wide coastal strip of five to ten miles and he outflanked a succession of attempts to stop him going down the coast, until he reached and captured Castellon. Thereafter he was held up, because the coastal strip no longer consisted of open arable fields and vineyards but became covered with orange groves, which are absolutely dense. At the same time that General Aranda was driving down the coast another army was striking from Teruel down the railway, the objective being Sagunto. These two armies were completely and effectively separated by a barrier of mountains, which come down to within about three miles of the sea, at a place called Nules, where Aranda's army is still held up. The reason why this double thrust was a crucial test of the ability of the two armies was that the defence was in the most favourable strategic position conceivable, and covering vital positions. Based on Valencia, the Republicans had short, easy communications and many radiating roads to the front. The Nationalist army, on the other hand, was divided into two parts, which were completely separated from one another, Aranda being confined to his narrow coastal strip among the orange groves and the other force being in a waterless mountain country, with only one road behind it to its distant base. By the skin of their teeth, the Republicans managed to hold back the Nationalists from Sagunto, and with the failure to get Sagunto in the last few days of July and the first week in August went, I believe, the prospect of a speedy termination of the war by purely military action. Had Sagunto fallen and the two Nationalist armies joined hands, the road to Valencia was open, and with Valencia went Madrid and all the southern front.

After looking at this battle from the Teruel end and the coastal end, on my way back I went up to Amposta on the Ebro Delta. I was there on the 11th July, and I was told by the local staff officers that the Republicans were going to attack in the course of the next week or so. They knew all about it and were looking forward to it they said, and yet on the 25th July the Republican attack succeeded. There was that usual contempt for the enemy and for defence by the Nationalists, which is their great weakness. With the open lines through which people can constantly pass—spies and others—it is always very difficult to keep secrets or to prevent an initial success.

A quaint feature, peculiar to this civil war, is that perhaps the post of greatest honour for an officer or any other rank is to belong to a loud-speaker squad. Lorries go up to the front line, a loud speaker at the

end of a length of cable is erected, and propaganda is hurled against the other side. It needs courage to do the loud speaking, because the instrument cannot be hidden, and all sorts of events may follow its appearance.

FOREIGN INTERVENTION

The numerical intervention of foreigners in the war has been enormously exaggerated. In the battle of the Ebro, starting from the base line of 150 miles to which I have referred, only two weak Italian divisions were involved, because the other two had by that time been broken up and diluted, being 85 per cent. Spanish and the remainder Italian. The two-divisional front on which General Berti attacked early in March was less than eleven miles out of the total of 150 miles. On the 26th March, when I had dinner with him, he showed me maps—they were very elaborate and could not have been concocted specially for me—which showed that these Italian Divisions were still operating on a front of under eleven miles in a total battle front line which was by then 260 miles; that represents fairly, I think, the ratio of Italians to Spaniards in that battle. General Berti said to me at the time: "Of course I have more divisional artillery than a Spanish division, and it is more highly mechanised," but I would add that that was a doubtful advantage in this case, with only one second-class road through mountainous country.

So far as the air is concerned, while both German and Italian intervention exists, one can spend days on the front without seeing an aeroplane in the air. In the House of Commons last week, I criticized some figures quoted by Mr. Anthony Eden in the form in which he gave them. Figures have been published showing large totals of time in the air and number of raids, and so forth, but, if they are divided into machine flights per day, the number of actual machines operating is far smaller than is supposed. The bulk, if not all, of the forward area flying is being done by the extremely brave and skilful young Spanish pilots to whom I have referred. I believe that the intervention in personnel of foreigners has had about the same weight on both sides, in spite of what each side says about the other.

DISCUSSION

BRIGADIER A. R. SANDILANDS: I should like to ask the Lecturer whether he had any opportunity of coming into touch with Italians, either officers or rank and file, and discovering what their sentiments were about the civil war in Spain.

THE LECTURER: I have talked to many Italians—I have been restricted to those who can speak French or English—but I think it would be verging on politics if I spoke about their attitude to the war or the war's attitude to them.

MAJOR-GENERAL C. R. SIMPSON: I should like to ask the Lecturer to what extent the armies in Spain make use of artillery.

THE LECTURER: As I pointed out in the two illustrations that I gave, the total

volume of artillery available is necessarily relatively restricted. But it has seemed to me, from watching such shooting as I have seen, that with direct observation, which they usually enjoy in the hilly country, the shooting was extremely good. One is accustomed, with one's background of Flanders, to think in terms of indirect observation, but I have seen some very good shooting, and, of course, the effect of the modern instantaneous fuse on the hard ground is very different from the effect of the old 5.9 in the mud in the Salient, and much more unpleasant; the less volume of fire tends to have more effect.

VICE-ADMIRAL C. V. OSBORNE: Did the Lecturer get the impression that General Franco intends to force the capture of Madrid, or is he leaving Madrid to fall by itself when he has won the campaign in some other way?

I should also like to hear his comments on a suggestion I have heard, that all that General Franco is waiting for now is to get belligerent rights, because the starvation in Government Spain is already such that, with the addition of the blockade Franco would then impose, the Government of Spain would be bound to fall.

Also, could the Lecturer give us any idea, from his contact with headquarters, as to what the attitude of General Franco's Generals is to the British policy concerning belligerent rights?

At the beginning of the civil war we heard a great deal about the Spanish Foreign Legion. It was supposed to contain the best troops that General Franco had, and next to them were, it was said, the Moroccan regiments. How do those compare in efficiency as troops and also in numbers with the other regiments which General Franco has raised or which he is using?

THE LECTURER: As regards the Foreign Legion and the Moors: the Foreign Legion is not and never has been, in Spain, a legion of foreigners. It is a term that has come down from the Middle Ages, when the Spanish "Tezciv" were the best-known infantry in Europe, and means a force of Spaniards raised for service abroad. It was revived for the Moroccan campaigns. There is no analogy whatever between the French Foreign Legion and the Foreign Legion in Spain. The latter consists of Spaniards who are very good soldiers, though I do not think they are any better than the Navarrese.

I could not tell you the relative numbers. The Moors are, of course, one of the playthings of political propaganda, and are therefore a rather thorny subject to touch on, but I think it is fair to say that the number of the Moorish troops has been greatly exaggerated. Originally, I should say, there were about 8000. They have been augmented considerably since then. As regards their efficiency, they may be compared perhaps with the native troops that we took to France; they have their uses, but they are not up to the standard of the best European troops.

As to belligerent rights, that is a political question and I cannot deal with it. What one hears about it is coloured propaganda.

With regard to Madrid, I have gained the very definite impression, from being in Madrid on one occasion and outside it on two other occasions, and also from what I have been told, that the Nationalist forces had no intention at any time of taking it by direct assault. There was one attempt to get the Valencia road at Aranjuez, just South of Madrid, but it was not successful. Madrid, however, after the first few months, would have been a much greater liability than an asset. If Madrid had been taken it would have involved the feeding of a large starving population. Unquestionably the bombardment of Madrid has been greatly exaggerated. Before the war it was considered (I am quoting now what has been written in *The Times* over and over again) that there was a majority of sympathisers with General Franco in the city, and such remnants as remain are still sympathizers to a large extent.

With regard to starvation, I have not been on the Republican side in Spain for

eighteen months, and I only see the reports which everyone else sees. The situation with regard to food is undoubtedly very bad; individuals who cross the line emphasize this. Therefore there is much less possibility of secrecy than there was in the late War. There are many miles of country where a man with local knowledge can and does simply walk through the line, so that the information about conditions on the other side, although perhaps coloured by certain prejudices, is always fairly easy to obtain.

WING-COMMANDER L. O. BROWN: Could the Lecturer tell us the way in which both sides have used their air forces in this war?

THE LECTURER: I think that the use of air forces has been dictated by the nature of the terrain and the available forces. All through, there has been a tendency to use aircraft for forward area bombardment in a way in which one could hardly conceive they would be used by major Powers who had more artillery at their disposal. Until quite recently the effect of aircraft on partially trained troops was out of all proportion to their actual capacity for damage, and I think it would be a very rash person who drew any very definite strategical or tactical lessons from the use of aircraft in the Spanish war. The defences against aircraft have been very slight, and there has been a natural tendency on the part of the air force of each side to seek the line of least resistance, as we did ourselves in France. If we knew we should be shot at in one place and were not likely to be shot at in another, we generally went in the latter direction. The whole strategic lay-out and density have tended to prevent the use of aircraft in the Spanish civil war in the way in which one would have expected it to be used. There are a good many people flying aircraft who might be called visitors, who have no particular personal interest in getting killed in the conflict.

SUB-LIEUTENANT F. MEYNELL, R.N.: Do the inhabitants of the villages taken by General Franco accept him when their villages have been captured, or do troops have to be left behind to consolidate the position?

THE LECTURER: I would only say that I have been thousands of miles behind the lines on all fronts North of Toledo on different occasions and I have seen no signs of garrisons or even extra police. It must be remembered that, very broadly speaking, the areas occupied by the respective sides are the areas in which the sympathies of the population on the whole lay with them before the war began.

LIEUTENANT R. E. R. HAMMOND, R.A.O.C. (T.A.): Does the Lecturer think that air attack on the civil population in Spain is at all likely to be a decisive factor at any time in the present civil war?

THE LECTURER: I was not in or near Barcelona during the famous raids in March, but the reports of the British Commission on bombing are to the effect that, in the vast majority of cases, harbours and places of military importance have been the main objectives of air attacks. After all, that is only reasonable; there is no point in bombing a baby when one can bomb a boat; and, in view of the number of aircraft available in the Peninsula and the character of the Spaniard, I should think it is very unlikely that air attack on the civil population could be decisive in Spain.

THE CHAIRMAN

It is often said that the next war will be quite different from the last. The last war is the only one in which I have taken part, and the chief impression left on my mind by the Lecturer is how totally different is the conflict in Spain to my conception of modern war.

It only remains for me to thank Wing-Commander James for his most interesting address.

The customary votes of thanks to the Lecturer and Chairman were carried by acclamation.

INFANTRY AND TANKS IN THE SPANISH CIVIL WAR[1]

WITH the completion of the second year of war in the Spanish Peninsula, certain broad lessons have begun to emerge as to the handling and capabilities of infantry and light tanks fighting under more or less modern conditions.

A word of warning, however, is necessary in regard to these lessons. The conditions of the Spanish Civil War differ widely from those that might be expected to obtain in a life and death struggle between two first-class European powers. The Spanish infantry on both sides—while displaying high qualities of bravery and endurance—are, for the most part, only semi-trained and lack generally their full complement of modern armaments, such as machine guns and mortars. Both sides are particularly weak in artillery. This weakness has grave repercussions in the tactical sphere and tends to lead to prolonged and indecisive struggles between opposing bodies of infantry. Lack of sufficient field artillery also suggests that the destruction or neutralization of the defenders' A.T. armament is practically impossible, and imposes, therefore, an additional handicap on the attacking tanks.

The Nationalists, who enjoy an ample superiority in the air, have endeavoured to rectify their weakness in gun-power by the prodigal use of aircraft as a form of long-range medium artillery. This unusual employment of aeroplanes is rendered possible only by reason of the technical ineffectiveness and lack of numbers of the Government air forces and anti-aircraft artillery. As the Government do not possess sufficient "fighters" to check the manœuvres of the Nationalist bombers, these latter are enabled to fly about almost unhindered. The inadequacy of the anti-aircraft defences on the Government side, moreover, permits hostile bombers to fly low and carefully to select their tactical objectives and targets. Air bombardments, however—even in such unusually favourable conditions—have not proved to be an efficient substitute for the accurate and sustained fire of artillery.

[1] This article is based on a contribution to the *Revue Militaire Générale*, September, 1938, entitled "L'infanterie dans la guerre d'Espagne," by Commandant Andriot.

Value of Well-Trained Infantry

Shortage of modern armaments would, it might be supposed, tend to favour the defensive as against the offensive, and to afford at any rate some positive evidence in support of those critics who assert—in season and out of season—that the day of the successful offensive is over. In spite of the plausible arguments propounded by these gentlemen, the exact opposite appears to be the case. The defensive, either in strategy or tactics, has not displayed any marked or inherent superiority of strength over the offensive. Victory inclines, as ever before, to the side that can command the services of the largest numbers of relatively well-trained infantry. The defensive, which is handicapped by presenting the initiative to the enemy, demands the highest qualities of tactical skill, technical preparation and moral endurance. Only those troops which are capable of a high standard of attack and manœuvre can be expected to conduct a successful defence.

Material, such as tanks, artillery, fortifications and aviation, is in reality worth no more than the men who employ it. Unfortunately, the public, who read widely in the Press about the impregnability of "Maginot Lines," "Siegfried Lines" and "Iron Rings," possibly do not appreciate the fact that defensive lines, however strong, cannot compensate for deficiencies in the training of the troops. The strength of the defence, it should be realized, does not lie in concrete forts or barbed wire aprons, but depends upon the development of an accurate and overwhelming fire, delivered by weapons manned by highly skilled personnel.

The Fall of Bilbao

These truths may be unpalatable to many, but they are not easy to refute; the fate of Bilbao, moreover, affords proof of their accuracy. The Basques, who had foreseen the Nationalist attack, had commenced, during the winter of 1936–37, the work of putting Bilbao in a state of defence by converting the town into a vast entrenched camp, the outer defences of which—the so-called "Iron Ring"—extended over a distance of about forty-five miles. Thanks to the presence in their ranks of numerous miners, these defences were exceedingly strongly built; the trenches and dug-outs were the work of specialists; and concrete had been used lavishly. This system of defences failed to hold up the Nationalist attacks for two reasons. First: although, from a technical point of view, the works were strongly constructed, they were, in many respects, tactically deficient. Trenches were not always well sited; gaps existed in the defensive system; flanking fire was often lacking; there was complete ignorance of the value of the reverse slope position; and the depth of the position was generally inadequate.

Certainly the defence was well dug in. But the importance of zones of fire was not fully realized. Secondly: the lines of fire were manned by personnel who were both unskilled and in insufficient numbers. In order to defend the forty-five mile perimeter there should have been—according to the calculations of 1918—at least 70,000 men. The Basques, however, could muster only about 50,000.

On 11th June, 1937, the Nationalists attacked a narrow sector of the Iron Ring, which they had selected on account of the existing gaps. This attack was launched from a starting line some 3000 yards distant from the works to be assaulted and was held up for a whole day and a night a few hundred yards in front of the Basque trenches. The ultimate success of the assault should not blind us to the faults in execution which, in the face of a well trained enemy, would certainly have been severely punished. Thus we may draw, with some confidence, the conclusions that the Basque fortifications did not, of themselves, possess any defensive value, and that the semi-trained militia sheltering behind them displayed no new qualities of defensive worth.

Defended Localities

Defended localities, however, have played a very important role in the Spanish Civil War. On numerous occasions isolated strong points, such as towns and villages, have been able to withstand, for a long time, infantry assaults launched against them. The Government forces, in particular, have shown a marked predilection for the defence of towns and buildings. The probable reason for this is that, in street fighting, the militia have been able to defend themselves with greater success than in the open field, where the superior armament and training of the Nationalist infantry are afforded full play. The Nationalist weakness in artillery, moreover, renders the speedy demolition of buildings most difficult. Bombardment from the air has not proved an efficient substitute for artillery, as aerial bombs lack accuracy and sustained weight of fire. Madrid, for example, has resisted for two years all attempts of General Franco's troops to take it. In the end, by dint of bitter experience, the Nationalist forces have learnt to leave such places severely alone and to avoid a direct assault. The method favoured—particularly since the Catalonian offensive of March, 1938—is to outflank these localities and to surround them completely, trusting to demoralization, thirst and shortage of ammunition to bring about their collapse. Hand grenades have been invaluable in street fighting and also in the defence against light tanks. The general lessons learnt in respect of tanks will be dealt with later. But it can be asserted that light tanks have disclosed a high degree of vulnerability in street fighting.

There have been occasions when a considerable quantity of modern material has been concentrated against a particular tactical point and has obtained a local success. In these instances the immediate support of infantry has been essential in order to " mop up " and to consolidate the ground won.

Stabilization and Motorization

Nevertheless, although the experience obtained in the use of modern armaments in Spain does not seem to have lent support to the theory of the general superiority of the defensive over the offensive, yet, in fairness, it must be admitted that modern armaments have contributed towards important developments in the tactical processes of blocking gaps in defence. The delaying power of infantry, equipped with modern weapons, permits of rapid stabilization of the front in case of a defeat, and of the limitation of enemy success in case of a breach in the line.

The motorization of infantry would, it was supposed, assist the attacker to convert a " break in " into a " break through " by rapidly carrying up fresh reserves from the rear. This does not appear to have been the case in Spain, however, where it has been of advantage to the defenders rather than to the attackers, because it has enabled the former to transport troops more rapidly than the latter and so stabilize the sector threatened. One of the difficulties which detracts from the theoretical value of motorization is that infantry can only rarely enter the battle zone in their vehicles, and usually time is lost by their having to dismount and complete the last stage of their journey on foot. The Italian reverse at the battle of Guadalajara in March, 1937,[1] affords an outstanding example of the danger of keeping troops in their vehicles too long. There the troops, while seated in their lorries in a dense traffic block extending for several miles, were overwhelmed by a low-flying attack from the air.

Although tanks and aviation have been afforded every opportunity to prove their value, experience has shown—at any rate in this theatre—that nothing can replace infantry acting in support of these weapons. The development of modern armaments, both in quality and quantity, has not yet realized the dream of every combatant, the substitution of machine power for man-power.

The Composition of the Infantry

The composition of the infantry on both sides explains the nature of the tasks which this arm has been able to fulfil, and also the manner in which they have approached these tasks.

[1] The course of this battle was described in an article entitled " Aircraft and Mechanized Land Warfare," by Capitaine Didier Poulain, published in the JOURNAL, May, 1938.

The infantry of both armies, it may be affirmed, lack homogenity and suffer from numerous imperfections.

The Nationalist infantry comprises :—

(*a*) Units belonging to the regular army, portions of which joined General Franco in July, 1936.

(*b*) Regular contingents coming from Morocco, including the Foreign Legion—nearly all Spaniards—organized in two brigades, and Moorish regular units.

(*c*) " Phalangist " civil contingents, raised and armed for the defence of civil liberty in 1933.

(*d*) Carlist volunteer units recruited in Navarre, known as *Requettis*.

(*e*) Civil Guards, comparable to the French mobile gendarmerie ; these form troops of high quality.

(*f*) Foreign contingents from Germany and Italy, with their material. Amongst these the Italians constitute a complete Army Corps, formed from " Black Shirt " divisions that had been set up after the Abyssinian campaign of 1936 ; the Germans, who are not numerous, consist chiefly of specialists in charge of modern equipment, such as A.A. artillery and aircraft.

The troops coming from Morocco are the best trained and are fairly well provided with machine guns and mortars. The " Phalangists " and *Requettis* are courageous but display, on occasion, a spirit of faction which detracts from their usefulness. Since April, 1937, they have been incorporated into formations of the regular army.

The Government forces include both Militia and International Brigades. The Militia were formed from workers' organizations, and recruited later from contingents raised by conscription. In the early stages the military value of these men was practically nil, but with the prolongation of the struggle they are hardening off into useful bodies of troops. The Government counter-offensive of July–August, 1938, on the Ebro, which was designed to relieve the pressure of the Nationalists on Valencia, was entrusted to the—by now—seasoned Militia units. These troops fought steadily and showed themselves capable of manœuvring and of surprising the enemy. Their conduct, therefore, registered a great improvement since the battle of Teruel, in January, 1938, where they were defeated by inferior numbers of Nationalists. A further factor in their recent success may be that the quality of General Franco's troops—his infantry officers in particular—is alleged to be deteriorating owing to heavy casualties, which are difficult to replace.

The International Brigades formed for a long time the backbone of the Government defence. These men were volunteers from all parts of the world, and included many ex-soldiers who had served their time in various conscript armies. The exertions of the International Brigades undoubtedly saved the Government cause from an immediate collapse in 1936, and gave time—at the cost of high casualties—for the raw Militia to find their feet.

This brief description of the contending infantry will help to illustrate the vast differences between the Spanish and the French, German or Italian infantry.

The Infantry Mortar

This war has emphasized that the weapon which affords the closest support to attacking infantry is the high-angle mortar. Here is the weapon which can best search out and destroy the defenders, sheltering inside their trenches. And the Nationalist infantry places more and more reliance on its increasing supply of mortars, from which it has obtained excellent results.

Tanks

Both the Nationalists and the Government forces have made a wide use of tanks, which were chiefly drawn from three sources—German, Italian, and Russian.

The German tanks are light 6-ton models ; their armament comprises two machine guns co-axially mounted in a turret ; the armour varies from two-fifths to three-fifths of an inch ; and top speed amounts to about thirty miles an hour.

Italian tanks are mostly Fiat-Ansaldo, 1933 model, and weigh rather more than 3 tons ; their maximum speed reaches twenty-five miles an hour ; armour varies in thickness according to the protection which it is desired to afford to the various portions of the machine ; on the front of the tank the thickness is about three-fifths of an inch ; on the sides it decreases to less than two-fifths of an inch ; the armament comprises one machine gun—eventually to be increased to two—firing through an armoured loophole ; there is no moving turret as in the German model. The designers had hoped by eliminating the revolving turret to reduce weight and thus increase performance. It has been discovered, however, that, as the tanks can only fire in the direction in which they happen to be advancing, they are extremely vulnerable to attacks from the flanks and rear.

The Russian tanks fighting in Spain comprise two types : the T.26 and the T.28. These models, despatched originally from Russia, have

also been copied locally in Spanish Government arsenals. The T.26 weighs 8½ tons ; armament comprises one 1.75-in. gun and one 0.45-in. machine gun, co-axially mounted in a movable turret ; the maximum thickness of armour rises to about three-fifths of an inch ; speed attains twenty miles an hour. The Government constructors have also built an 8½-ton tank modelled on the T.26, but with four-fifths of an inch of armour and with a slightly lower speed. The T.28 is a medium 20-ton tank ; the armament comprises one 1.75-in. gun, co-axially mounted, with a machine gun in a central revolving turret and two machine guns in flanking movable turrets ; maximum speed amounts to twenty-five miles an hour. Broadly speaking, Russian tanks are well protected on their upper portions, but they suffer from defects in construction on their lower surfaces, which allow them to be set on fire quite easily.

Neither German nor Italian tanks serving in Spain have come up to expectations. In Germany, high hopes had been built on the light 6-ton tank, produced at the beginning of 1935 ; their mobility was greatly admired ; and according to report 1500 of them had been incorporated in the newly formed armoured divisions (*Panzerdivisionen*). At that time the German Higher Command were believed to be weighing the advantages of the *attaque brusquée*—the sudden onslaught, launched without warning. The idea underlying this doctrine was not to attempt to crash through a fortified zone, but to use the mobility of tanks to turn the flanks ; high speed, therefore, was the essence of the plan. Speed, however, implies a diminution in armoured protection. But, lately, these ideas have been modified ; it has been realized that the race for the flanks may well be countered by the construction of fresh lines of defence which may have to be stormed in their turn. Hence, there has been a reaction away from high speeds towards lower speed combined with thicker armoured protection.

The Italian tanks had already taken the field in Abyssinia, where their mobility had proved of value ; but their cross-country performance was poor. The comparative failure of light tanks in Spain, however, is not due mainly to defects in construction or to the use of faulty materials. When these tanks were planned the anti-tank weapon was in its infancy and its potentialities not fully recognized. It was hoped to evade the fire of these weapons by high speed and manœuvre ; speed, it was alleged, would take the place of armour. Anti-tank guns, however, have been multiplied and their armour-piercing qualities largely increased. There is now but little chance of any light tank being able to break through a zone strongly defended by A.T. weapons. Moreover, owing to the absence of a proper complement of field and medium artillery on both sides in Spain, it has proved difficult to neutralize

A.T. armaments ; and this has greatly added to the stopping power of these weapons. The destruction or neutralization of A.T. weapons, it must be emphasized, is one of the principal tasks of the artillery. And the machine guns and mortars of the attacking infantry must support their artillery to the full. After a comprehensive survey of the Spanish War, Major-General Fuller has declared that " light tanks are practically useless . . . in any case, the light tank is not a fighting instrument."

ANTI-TANK WEAPONS

At the moment, Spain is being utilized as a vast testing ground for anti-tank weapons constructed by the chief armament firms, such as Krupps, Hotchkiss, Oerlikon and Vickers. From all accounts A.T. weapons and defensive measures against tanks have reached a far higher level of efficiency than the tanks themselves. For years the tank's only real enemy was the field gun, whose trajectory—except at the shortest ranges—was too high for it to deal effectively with these vehicles. Things are very different now. Both sides are employing an A.T. armament, which possesses great penetrating power and rapidity of fire combined with flat trajectory. The weapons, that have registered the highest number of hits, are :—

(*a*) The ½-in. Hotchkiss heavy machine gun.

(*b*) The ¾-in. Oerlickon gun.

(*c*) The 1-in. Hotchkiss gun.

(*d*) The German 2-in. P.A.K. model.

The ½-in. Hotchkiss, which weighs about 400 lbs., fires a 2-oz. bullet at a rate of about 450 rounds a minute. This projectile, however, is too light to have much destructive effect and cannot be charged with H.E. ; it simply penetrates the tank at weak spots or smashes up the track mechanism.

The Swiss Oerlickon gun weighs about 600 lbs. and fires 300 rounds a minute ; the projectile weighs 5 oz. and contains a small H.E. charge ; the little shell can penetrate a 1¼-in. steel plate at 500 yards, provided that the projectile makes a direct, not a glancing hit. This gun has secured an easy mastery over the German and Italian light tanks, which carry a maximum of only three-fifths of an inch of armour.

The 1-in. Hotchkiss weighs 1600 lbs. and fires 180 aimed rounds a minute ; the shell weighs about 12 oz. and contains a charge of H.E. This is a formidable weapon, but its weight makes it difficult to handle in the field.

The German P.A.K. gun (*Panzer-Abwehr-Kanone*) is a heavy weapon, which looks more like a field gun that a close-support weapon for infantry; its special characteristics and powers of penetration have not yet been disclosed.

The A.T. gun, moreover, is not the only defensive armament that can be used against light tanks which are rash enough to advance unsupported by infantry. When asked to relate their experiences against light tanks, the Nationalist infantry state generally that they have little fear of them; they allow the tanks to pass and, springing up behind them, sprinkle them with a tin of petrol; a comrade then hurls a grenade at the tank, which bursts into flames. Naturally, if the tanks were closely supported by their own infantry, this manœuvre would not be feasible.

Although the Spanish War has revealed the weaknesses and deficiencies of light tanks, it is not to be supposed that these conclusions are necessarily applicable to heavy or medium tanks. In the past, too much stress has been laid on speed and not enough on armoured protection. Provided that a sufficient thickness of armour, proof against the smaller types of A.T. weapons, is provided, there is every reason to believe that the tank can still play an important and perhaps a decisive part in warfare. Increase of armour will force upon tank designers some reduction of speed. However, since the crews cannot serve the tank armament with efficiency while moving fast over broken ground owing to pitching, this is a minor disadvantage.

The smaller types of A.T. weapons are not capable of dealing with a heavily armoured tank. Larger models, such as the 1-in. Hotchkiss, will have to be brought into action. These weapons have not the same high rate of fire, are clumsy to handle and more difficult to conceal than the lighter types. They will be more readily spotted by the aircraft, which are acting in co-operation with the attacking tanks, and will lay themselves open to neutralization or destruction by the supporting artillery. Hence a substantial increase in the thickness of armoured protection opens up a broad channel along which tanks may be expected to act with decisive effect.

Tanks by themselves, however, will never achieve any permanent results. They must be closely followed up by relatively large numbers of well-trained infantry, strengthened with all necessary forms of modern equipment.

CONCLUSIONS

To summarize, therefore, we may conclude that the lessons of the war in Spain emphasize that :—

(*a*) The offensive, which relies in surprise and manœuvre, is still the strongest form of warfare.

(*b*) Numerous and well-trained infantry form the mainstay of an effective defence.

(*c*) The light tank has proved of little military value in the peculiar circumstances obtaining in that theatre.

(*d*) The medium or heavy tank, thickly armoured and of moderate speed, would appear to have great possibilities particularly when used in close co-operation with infantry and artillery.

COMBINED OPERATIONS WITH THE CHINESE AGAINST PIRATES

WEST RIVER, 1923-25

By Commander W. G. A. Robson, R.N.

ALTHOUGH there has been no piracy on the West River and very little on the Yangtse for the last ten years, conditions in China may shortly be such that piracy will be a profitable business again. It may be of interest, therefore, to relate how co-operation between a part of the Chinese Army and the British flotilla on the West River suppressed piracy there in some four months.

The political situation in 1923 and 1924 was chaotic, as it may well be again. Sun Yat Sen, who had been the prime mover in the 1911 Revolution, had established a Southern Government with his seat at Canton, while Tsao Kun was president of the Northern Government with its capital at Pekin. The British Government recognized only the Northern Government. The country itself was run more or less on the feudal system, and was divided into self-contained districts each controlled by a General. The one idea of these Generals was to line their own pockets, with the result that pirate bands were never molested provided they paid sufficient "squeeze." This put a premium on piracy.

A word about the pirates themselves and their methods: in some cases they were born to it, in fact there were many villages where the stock in trade was piracy; on the other hand, they were often soldiers who had not been paid or fed and who had taken to piracy as a means of livelihood. The pirate villages were as a rule difficult of approach, and were often defended by machine guns, and in some cases by cannon. This made them practically impregnable to the ordinary Chinese troops, who were badly equipped and badly led. The various pirate gangs, besides actually pirating cargoes, used to levy dues on the river traffic. In 1924 the foreign traffic alone amounted to some £18,000,000, so it was a lucrative business. Other profitable ways they had of raising money were by holding wealthy passengers to ransom, and levying dues on the farmers at harvest time. In the latter case, if the farmer refused to pay, his crop was burnt. Their intelligence system was simply uncanny, and they always knew the whereabouts of gunboats, the movements of steamers and tows, and so forth. From our side it was very difficult to get any information about them, as their terrorist methods towards possible informers were most effective.

Before dealing with the methods of piracy, it should be realized that the river traffic consisted firstly of river steamers carrying both passengers and cargo, and with a speed of the order of eleven knots; and secondly of tows. These tows were junks towed by launches, and might be a fast passenger service doing as much as seven knots, down to cargo tows of four or five junks doing two knots if they were lucky. The pirates had two methods of dealing with a ship; these were internal piracy and external piracy. The plan for an internal piracy was for the gang to enter the ship in the guise of ordinary passengers, make a sudden attack at a favourable moment, and, after gaining control of the ship, compel the master to steer for some place where the cargo could be unloaded at leisure. This was the invariable method used with river steamers. The external piracy explains itself: a blocking operation might be undertaken by the pirates in some channel, a collision staged, or wires used to foul a propeller; in fact, anything to cause confusion on board and allow the pirates to get alongside.

During 1923 and the beginning of 1924 there was a local civil war going on in South China between Sun Yat Sen, backed by Soviet Russia, and a more moderate element who wanted union with the North. As a result of this no action was taken against the pirates by the feudal Generals who were too occupied with their own affairs. Despite continual patrolling by West River gunboats, some 5 per cent. of British cargoes were pirated in the June quarter of 1923, which resulted in the following anti-piracy measures being taken. Four armed launches were commissioned for the West River Flotilla and were used as escorts for convoys, which were run through the most dangerous parts of the river and delta.[1] The river steamers were fitted with a system of grilles,

[1] THE WEST RIVER FLOTILLA

Gunboats.	*Speed. Knots.*	*Armament.*	*Draught. Feet.*
"Tarantula"	17½	2 6-in. 1 3-in. H.A. 1 Pom-pom	5
"Cicala"			
"Moth"			
"Moorhen"	13½	2 12-pdrs.	3
"Robin"	8	2 6-pdrs.	2½

Additional craft after November, 1923:—

Armed Launches.	*Speed. Knots.*	*Armament.*	*Draught. Feet.*
"Dom Joao"	12	1 3-pdr. 2 Lewis	10
"Hing Wah"	13	3 Lewis	11
"Wing Lee"			
"Kwong Lee"			

and Indian guards were carried aboard. The gunboats continued patrolling, as this was the only protection they could afford to the slower tows. These measures did reduce piracy of British traffic, but it was well realized that the only way to stamp it out finally was to attack the pirates in their bases and round them up or kill them. Desirable as it was, the Hong Kong Government were not allowed to approach the Southern Government to bring about co-operation between the Chinese Army and the West River Flotilla, as the British Government did not recognize Sun Yat Sen. It was obviously no use approaching Pekin.

Thus matters remained until October, 1924, when this co-operation was finally brought about as the result of a Chinese dinner at Canton at which the Senior Naval Officer sat next to a certain Chinese General who had been well known on the river in pre-war days. The conversation turned to piracy, and the General guaranteed to suppress it on the river if he was given 50,000 dollars a month, and coal for his river launches. In order to confirm this offer, the S.N.O. asked him to come on board his ship, the " Tarantula," the next morning and discuss the matter further. This he did and reiterated every word he had said the night before. The " Tarantula " sailed for Hong Kong that morning, and the next day the S.N.O. went to see the Governor and told him of the General's proposal and suggested that the Government should find the 50,000 dollars. The Governor, however, regretted that as the British Government did not recognize the Southern Government, he could do nothing in the matter. Having failed through official channels, the S.N.O. went to the Chairman of the Hong Kong Chamber of Commerce, who held an emergency meeting. That body voted the 50,000 dollars a month and all the coal and stores asked for after one of the shortest meetings ever recorded.

Three days after leaving Canton the " Tarantula " was back again, and the General was asked to come on board. He was shown the Chamber of Commerce's promisory note, and told that he would get the first instalment at the start of the first operation. He asked for a fortnight in which to collect intelligence of the pirates ; but in rather less he was on board again and suggested the 20th November. It would be harvest time then, and he had information that a band of ninety pirates would be collecting dues from farmers on a certain island in the river delta. This island, some twenty miles long and ten wide, was surrounded by the comparatively narrow channels of the delta. Briefly, the plan was that while the West River Flotilla guarded the waterways to prevent the pirates escaping, the Chinese troops were to land on the island at dawn and comb it.

On the 19th the West River Flotilla sailed from various parts of the

river and delta, took up their stations in the creeks surrounding the island that night, and the " Tarantula " went to the rendezvous which had been arranged. To everyone's astonishment the Chinese arrived punctually, and the drive began. Actually this was not a very successful operation, as one of the detached companies had arrived at the island the evening before, the company commander being determined not to be late. The pirates were suspicious, and the majority of them left the island. Seven, more greedy than the rest, remained and were captured. These seven, as was invariably the case in subsequent combined operations, were, in the words of the General's report, " removed to Canton for trial and execution." The detached company commander also lost his head.

During the next three months several operations were undertaken on the same lines, and they resulted in confining the pirates to their bases from which they only made short sorties. Eventually operations were undertaken against the pirate villages themselves, when the gunboats sometimes provided covering fire for the assaulting Chinese troops. On one occasion when the assaulting force was held up, the captain (and only executive officer) of the gunboat landed with eight men and a Lewis gun to stiffen the assault. On being asked by the Commodore for his reasons for disobeying station orders, this officer said that he had landed to confer with the Chinese General, and in order not to " lose face " he had taken a bodyguard with him. However, he had some difficulty in explaining why his bodyguard included a Lewis gun. By the end of April, 1925, these operations had accounted for some five hundred pirates, and piracy had practically ceased. Sun Yat Sen had also defeated his adversaries in the civil war and had more time to devote to internal affairs. As a result the General was appointed Piracy Suppression Officer over the whole river and delta district.

If piracy does break out on the rivers again, the co-operation of the Chinese will be necessary once more for attacking the pirates at their bases, and, judging by past experience, it seems possible that if this co-operation cannot be obtained through the usual channels, it may be secured in other ways.

THE MEDICAL CARE OF AN EXPEDITIONARY FORCE IN THE TROPICS [1]

By Sir Aldo Castellani, K.C.M.G., D.S.C., M.D., F.R.C.P.,
Count of Kisymaio,
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during the Abyssinian War

WAR began on 3rd October, 1935, and ended on 9th May, 1936, with the proclamation of the Italian Empire, four days after the fall of the Ethiopian capital, Addis Ababa. During this period, the white troops on the northern front (Eritrea) and the southern front (Somaliland) numbered approximately 500,000 men, including the Militia and the Gendarmerie and other police forces, and naval ratings. It is, I believe, the first time in the history of the world that so large a mass of white troops has been transported to a tropical zone for military purposes.

The thought that half a million young white soldiers would be fighting in a tropical zone—a large part of it with a torrid climate—caused serious misgivings to various experts, as for many years it had been recognized and had become almost an axiom, that to prevent heavy losses from sickness in colonial wars, the bulk of the troops employed should consist of natives. Articles appeared in many newspapers and magazines, expressing the view that the Italian troops, even if spared by the Abyssinian bullets, would be destroyed by disease.

These prophecies were based on sound historical facts. In 1890 the French lost in Tonkin, out of a total of 8505 white troops, 1125 men killed by disease. In their expedition in Madagascar in 1895, during the ten months from March to December, more than a third of the troops died of disease. In the Cameroons, the German losses from disease amounted to 112 per 1000 troops employed. In the Boer War, the number of deaths from disease compared with the number of deaths on the battlefield and deaths from wounds was in the proportion of 1.98 to 1; the number of deaths from disease was, therefore, nearly double that of the firing line. During the Great War, the East African

[1] This summary of an article entitled "Hygienic Measures and Hospital Organization of the Italian Expeditionary Forces during the Ethiopian War, 1935–36," which originally appeared in the *Journal of the Royal Society of Arts*, is produced by kind permission of the Author and of the Editor of that publication.

Expeditionary Force, fighting from 1916 to 1918, had an average strength of 50,000 officers, non-commissioned officers and men. Of these, 2794 were killed in battle or died of wounds, and 6308 died from disease. The Italian expeditionary force in Albania in 1918 had very severe losses from disease, and so had the French and British forces in Macedonia.

Organization

It was most fortunate that the Head of the Italian Government realized immediately the enormous importance of medical preparation and organization in a colonial war, and paid the same attention to it as to the purely military preparations. The requests made to him for medical personnel and hospitals were immediately acceded to, and were in fact often doubled at his express command. All the Medical Services —Army, Navy, Air Force, Colonial—were placed under one joint direction. Vast supplies of quinine and other essential drugs, disinfectants, sera and vaccines, were despatched to Africa, as well as hospital, X-ray and laboratory equipment of every kind, and huge quantities of cotton wool, gauze and bandages. I can testify that, on more than one occasion, the despatch of medical and sanitary material took precedence over the despatch of munitions and war material.

The medical organization in Africa during the war had great assistance. The High Command (Marshal Badoglio, Marshal Graziani, Marshal de Bono) and the Under Secretaries of State for War, the Navy, the Air Force, the Militia and the Colonies, always showed the greatest interest in health matters.

Hospitals.—The Italian army had in Africa during the war period :—

(1) One hundred and thirty-five base and field hospitals. Each base hospital had, in addition to the medical and surgical wards, a bacteriological laboratory and an X-ray department ; fifty-five small hospitals, transportable on mules ; thirteen special surgical units ; fifteen motorized X-ray laboratories ; eleven dental motor ambulances ; four central institutes for special chemical and bacteriological investigations ; twelve disinfecting sections ; six disinfestation stations ; 139 large water sterilizers of special pattern—*Potabilizzatori* ; four general magazines and depots for medical supplies.

(2) The Navy had twenty hospitals and infirmaries along the coast, and eight hospital ships splendidly equipped, six of which were air-conditioned.

(3) The Air Force had twenty-two infirmaries.

(4) The colonial medical service, reorganized by H. E. Lessona, placed at the disposal of the Army Medical Service its thirty hospitals and clinics and its laboratories in Eritrea and Somaliland.[1]

By order of the Head of the Government, all the Army medical officers followed a course of instruction at the Hospital for Tropical Diseases in Rome, before leaving for Africa.

Pharmacists and Chemists.—There were in Africa 178 Army pharmacists and chemists—all officers—and ten in the Navy.

Red Cross Nurses.—There were 384 nurses serving on board the hospital ships and in base hospitals. Among them was the Crown Princess, an admirable nurse, who provided a fine example. Before going to East Africa all the nurses took a course in tropical nursing at the Hospital for Tropical Diseases in Rome.

Hospital Attendants and Male Nurses (so-called sanitation troops).—There were 15,500; but when there were few in hospital (and this was practically always the case) they volunteered for labourers' work and became roadmakers.

Naval Hospital Attendants and Male Nurses.—There were 639 on hospital ships, warships in the Red Sea, and in hospitals on shore in East Africa.

Heads of the Various Medical Services.—At the head of the Army Medical Service in Eritrea there was a Surgeon Major-General of long tropical experience. In Somaliland, a Senior Surgeon Colonel, also of long tropical experience. In each hospital ship there was a Medical Director—a Colonel or Senior Lieutenant-Colonel—of the Naval Medical Service with ten to twenty doctors under him.

Several months before hostilities commenced, the Head of the Italian Government created the post of High Consultant and Inspector-General of all the medical units in East Africa and the Red Sea to direct generally and to co-ordinate their activities. I had the honour of being called to fill this post.

This, then, was briefly the Health Organization. Let us study the results, which, at least in part, can be ascribed to it, especially in regard

[1] The medical personnel in Africa was:—

Officers of the Royal Army Medical Corps and Militia	2205
Officers of the Royal Naval Medical Corps	117
Officers of the Air Force Medical Service	42
Colonial Medical Service	120
Total	2484

to the prevalence of diseases that commonly afflict armies in colonial warfare.

Major Diseases

Malaria.—In many colonial and non-colonial wars of the past, malaria has been the scourge that greatly interfered with war operations. For example, in the Great War, the real cause that paralysed for so long the advance of the allied armies in Macedonia, was malaria. Who does not remember the Struma Valley? I have seen battalions with 95 per cent. of the soldiers and officers stricken with malaria a month after arrival. The bulk of the cases occurred during the period of seven months, May to November, which is, in the Balkans, the malarial season. In the tropics, the malarial season may be said to extend to the whole year. In 1918, with a force amounting to 128,747 men and officers, there were 59,087 admissions to hospital for malaria, with 272 deaths, and to this number should be added 133 cases of blackwater fever, with 28 deaths. Very heavy losses from malaria were sustained also by the French and Italian forces. In the East African Expeditionary Force in 1917, the average ration strength of the Expeditionary Force was 50,702 men and officers; there were 72,141 admissions to hospital for malaria, with 499 deaths.

In the recent war in Ethiopia, malaria did not give very serious concern, although it should be noted that, on the northern front, a number of zones such as the Mareb region were badly malarial, and on the southern front, all the zones were terribly malarial, the disease being absolutely general among the indigenous Somali population. Naturally, there were a certain number of cases among the Italian troops, and an occasional pernicious one, but the total number and the mortality were infinitely lower than had been expected. With a white army approximating half a million men, there were 1241 cases of primary malaria admitted to hospital and 1093 admissions for relapses, with twenty-three deaths from pernicious forms, including blackwater fever, which was extremely rare. Judging by the German East African Campaign during the Great War, we should have expected an enormous number of admissions to hospital for malaria—well over 300,000, and over 2500 deaths from it.

What were the prophylactic measures taken?

With the troops continuously on the move and the area of operations being enormously extended, mechanical prophylaxis, such as mosquito nets and anti-larval measures, was often impossible. From the beginning we insisted on quinine prophylaxis: every soldier received three tablets a day of quinine sulphate or bihydrochloride—each tablet con-

taining 0.2 grm. (3 gr.)—and took them, a good example being given to the ranks by those in authority; at every meal, the Commander-in-Chief in Somaliland, General Graziani, and all his staff officers took quinine regularly. In Somaliland, I once found a group of Black Shirts who were not very enthusiastic about quinine prophylaxis; in fact, one non-commissioned officer, who had been a long time in Brazil, was strongly of the opinion that the best method of preventing malaria was to drink daily a large quantity of red wine. The more malarial the district, according to him, the more red wine should be imbibed. But when he heard that his own General took quinine, he changed his opinion, or, to be more correct, he added the quinine to his own method of prophylaxis. It must be remembered, however, that the "prophylactic" in which he had real confidence was obtainable only in small quantities, and then only in the evening.

The men also knew that we could find out whether they had taken quinine or not. They were frequently paraded, and one in every ten or twenty men was made to pass urine. This was tested with Tanret's reagent: on adding a few drops of this reagent, if quinine has been taken, the urine becomes turbid; if quinine has not been taken, the urine remains clear.

In Somaliland, a special anti-malaria service was instituted, with officers whose sole duty it was to prevent and fight malaria. The results were excellent.

Dysentery.—Dysentery has always been one of the worst scourges of armies in war time. In ancient times, generals feared the "bloody flux" more than they did the enemy. During the Great War the British Expeditionary Force in Gallipoli, consisting of 112,677 men and 4161 officers, had during the campaign which lasted from 25th April, 1915, to 8th January, 1916, 29,728 cases of dysentery, with 811 deaths; more than a quarter of the whole force contracted the disease. If we add the 10,383 cases of diarrhœa admitted to hospital, we see that a prodigious number, more than a third of the Army, suffered with severe intestinal trouble requiring hospital admission.

During the Italo-Ethiopian War, there was a total of 453 hospital cases of dysentery, with no death. One death occurred from a complication (pneumonia) some days after the termination of the war. It may, therefore, be said that during the war in Ethiopia there was not a single case of death from dysentery. The great majority of cases were amœbic; in fact all the cases were diagnosed as amœbic in the official hospital returns. It is possible that some mistake may have been made at times in the diagnosis, and that some few cases may have been in reality bacterial, but what is of importance from a practical point of

view and for comparison purposes, is the total number of cases of clinical dysentery. From experience of certain other Colonial wars, there should have been between at least 80,000 and 100,000 cases of dysentery, with 3000 or 4000 deaths.

What prophylactic measures were taken ?

(*a*) Every effort was made to give the officers and men pure drinking water. Practically all the officers drank mineral waters bottled in Italy and shipped to Africa in gigantic quantity. I do not think there has been any war previously in which mineral waters have been used on so large a scale. For the troops, and at times, of course, for officers too, local water, obtained from rivers and wells, was used, being always purified by boiling or by some method of chlorination. Distilling plants were erected in several places both in Somalia and in Eritrea. Officers and men in warships and in hospital ships drank the noted Serino water, imported by cistern-boats from Naples, where it is the normal city supply. The sources of Serino water are in the mountains : a big aqueduct carries it to Naples. Serino water is one of the best waters in the world, very light and bacteriologically pure. The first troops which landed in Somalia, when near harbour, received also Serino water, as we were given to understand that water was extremely scarce. We soon found, however, that we could always get water by drilling wells deep enough. It was, of course, as already mentioned, always boiled or chlorinated. A method of chlorination we found useful for troops on the march and during the campaign was the use of a fairly stable chlorine preparation in tablet form called steridnol, put on the market by Molteni and Company at Florence : one tablet to a litre of water.

(*b*) The second prophylactic measure was this. The men were recommended to get into the habit of washing or disinfecting their hands with a 2 per cent. solution of lysol or lysoform after visiting the latrine, and before having their meals. The lysol disinfection of the hands was strictly enforced on cooks and others working in the kitchens. In Somalia in many latrines and outside every kitchen was found a receptacle, fixed to a post, containing a 2 per cent. solution of lysol or lysoform. The receptacle was usually a discarded petrol tin, with a small tapering metal tube at the bottom, or a short rubber tube in which a glass pipette was inserted, from which the liquid would fall constantly drop by drop.

In some cases, discarded mineral water bottles were used, by making a hole in the cork and inserting in it a small metal or glass tube. The soldier exposes the palms of his hands to the dripping fluid and after receiving four or five drops he rubs the hands together and lets them dry naturally without the help of cloth or paper. There is no harm in his handling or touching food immediately after, even if the hands are still moist ; the amount of lysol that could thus be transferred to food being too small to do the slightest harm.

(c) *Abdominal Belt.*—A grandmotherly precaution was adopted. Each soldier was provided with and had to wear a flannel abdominal belt, or " cholera belt." I had the impression that this was a useful measure ; it tended to prevent abdominal chills, thereby rendering the soldier less liable to develop dysentery, even if he was a carrier. A small drawback was that in many cases the area of skin protected by the belt became covered with severe prickly heat.

Typhoid and Paratyphoid.—Cases of typhoid and paratyphoid infection have been very extensive in past colonial wars. In Somaliland, this group of diseases was almost completely absent. In Eritrea, there was a small number of cases, but the total was much less than that encountered during the same period of time and among the same number of troops in Italy. In Somaliland and in Eritrea we had a total of 458 cases, with 161 deaths (the small outbreaks of typhoid-paratyphoid in the tropics always have a high mortality). According to certain previous colonial wars, there might have been in Abyssinia over 50,000 cases, with several thousand deaths.

Among the precautions taken, one of the most important was vaccination with mixed vaccines, great care being taken in the preparation of the vaccine, both in the laboratories of the Institute of Public Health and in private laboratories. The vaccine used was the Tetravaccine : Typhoid + Para A + Para B + Cholera, as introduced by me in the Great War and previously in Ceylon. It was adopted during the World War by the American Red Cross Mission in Macedonia.

Typhus.—This is one of the most important diseases to which armies are exposed during war time. Suffice it to remember the terrible epidemic in Macedonia when a quarter of the Serbian army was wiped out by typhus. In the recent war, the Abyssinian troops, according to reports given me by foreign doctors in Addis Ababa, had thousands of cases of typhus : at least 20,000. In the Italian Army there was not a single case. What was the reason ? Rigorous cleanliness among the

troops. It was most exceptional to find a soldier infested with lice, while louse infestation was common among the Abyssinians.[1]

Smallpox.—There were a great number of cases of smallpox among the Abyssinians. During the first days of the occupation of Addis Ababa, I myself saw several infected persons walking about the public market-place; immediate steps were taken to isolate them. There was only one case among the Italian troops and he recovered.

Heat-stroke.—There were reports in a section of the lay Press that thousands of cases of heat-stroke occurred among the Italian troops. The fact is, however, that heat-stroke was almost completely absent among troops, both in Eritrea and Somaliland; there was a total of thirty cases, with seven deaths. It may be remembered that during the Great War the Expeditionary Force in Mesopotamia in 1917 had 6242 cases, with 524 deaths.

The principal precautions taken were the following:—

(1) The use of the sun helmet by every soldier.

(2) No alcoholic drinks, not even a glass of wine except after sunset.

(3) Whenever possible marching was avoided and the troops were driven in motor lorries.

Avitaminoses—Beri-beri.—In several previous wars in tropical and sub-tropical areas there have been epidemics of beri-beri; for example, in the campaign in Arabia during the Great War. As is well known, the disease is due to a deficiency in the diet of vitamin B. The patient feels tired, gets out of breath easily, finds difficulty in marching; then the whole body swells and becomes œdematous. In the last stage the œdema disappears, the muscles become atrophied and the patient resembles a skeleton, having been reduced to skin and bones.

From reports I received in Addis Ababa, there were a number of cases among the Abyssinian troops, and we saw several among the prisoners; not a single case was reported among the Italian troops. One case developed after the termination of the war, and was treated in the Hospital for Tropical Diseases, in Rome.

Scurvy.—Since ancient times, scurvy, too, has often been a scourge of armies in war time. As is well known, the disease is due to the diet being deficient in vitamin C. The patient feels tired, has pains in the joints, the gums swell and bleed. Later, the skin becomes covered with petechiæ and hœmorrhages occur. The soldier can no longer march and is useless.

[1] See also "The Romance of Preventive Medicine," in the JOURNAL for August, 1936.

Scurvy was rampant in the Abyssinian army on the Somaliland front. From reports of foreign doctors in the Ethiopian Red Cross, they had over 30,000 cases. There were no cases in the Italian Army. What was the reason ? A small precaution : every soldier was given a lemon a day.

Prophylaxis of Avitaminoses.—The principal prophylactic measure consisted, of course, in giving the soldier a fairly well-balanced ration. The ration of an Italian soldier in Africa was very similar to the ration he has in Italy, which he likes. In my opinion, it is a mistake to alter radically or too suddenly the ration to which a soldier is accustomed.

Tapeworms.—Tapeworm infestation, usually due to *tænia saginata*, is extremely common among the natives of Abyssinia, practically every native suffering from it at some time or other, the reason being their habit of eating raw meat. Some of the better-class natives take regularly on a fixed day, once every three months, an infusion of kousso flowers, which is a powerful vermicide. This is, I repeat, on a fixed day, and is called the " kousso flower day." There is also a " diplomatic kousso flower day." When a small chief calls on a big chief and the latter for any reason does not want to see him, but wants to be polite, the big chief will send, through a secretary or servant, the following message : " I deeply regret that I am unable to-day to see you as it is my ' kousso flower day.' "

Among the Italian troops, tapeworm infestation was extremely rare ; only two cases seem to have been recorded, both of *T. saginata.*

Cholera.—In certain papers of two years ago it was stated that the Italian soldiers were decimated by cholera. The fact is that there was not a single case of the disease during the war, before the war, or after the war.

Surgical.—It is not my purpose to enter here into any detail about surgical arrangements. The surgical organization, as already stated, was good. Each field and base hospital had excellent surgical wards ; in addition, there were thirteen " surgical units " or " special surgical hospitals " staffed by surgeons of great experience, in which only surgical cases were admitted and treated. As a rule, surgeons had not much to do and certainly they were never overworked. Septic complications were not frequent. Gas gangrene was absent. I may say here a few words on wounds inflicted by enemy weapons. A rather large number of wounds caused by bullets were of considerable dimensions, and showed great destruction of tissue. These wounds were caused by explosive bullets. The most terrible wounds, however, were those inflicted with native swords and knives.

Wounds from Wild Beasts and Poisonous Snake-Bites.—In some

regions of Somaliland wild beasts abound, and the two large rivers, Giuba and Shebeli, are rich in crocodiles. In various parts of the country there are poisonous snakes. The Italian troops suffered very little damage from these causes. There was not one death due to attacks by wild animals, and no death from snake-bites. Occasionally a soldier falling into the river was a prey to the crocodiles.

Scorpion Sting.—We had several cases, none fatal, of scorpion stings, especially in Somalia. The sting was often extremely painful, so that injections of cocaine and morphia had to be given. No serum was used; only a 1 : 200 solution of potassium permanganate, which was applied freely to the parts and also injected near the sting.

Minor Diseases

As the so-called major diseases were very scanty in their incidence, we paid a great deal of attention to the "minor diseases," which, although they do not cause death and do not usually incapacitate the soldier, are a source of annoyance. There are numerous minor diseases which afflict the soldier in tropical wars: the commonest in East Africa were prickly heat, jiggers, dhobie itch and *cheilitis crustosa*, but no soldier had to be put at rest or in hospital for any of these.

Prickly Heat.—Prickly heat, as is well known, is a generalized eruption composed of small red papules, with terrible pruritus and with hyperhydrosis. In Somaliland, at Assab, Massawa, and in the low regions of Eritrea, prickly heat was very common, but the soldiers affected were able to remain on duty. Special prophylactic measures were not necessary. As a curative measure, we used to a great extent the menthol-alcoholic lotion.

Jiggers.—The patient complains of severe pruritus in a toe or some other part of the foot. Examination shows at first a small black spot surrounded by a red halo; later there is a white bleb. The black spot is the parasite; the white bleb is the parasite full of ova. There were several cases in Somaliland, especially in the environs of Mogadiscio, but all the soldiers were able to carry on their duties.

Personal prophylaxis is the most useful measure, and the daily inspection of the feet and removal with a sterilized blunt needle of the small parasite. In semi-permanent and permanent camps, the most efficacious measure is to cement the floors so that they can be washed daily with disinfectants.

The so-called bamber oil, as modified by me—containing kerosene oil, coconut oil, carbolic acid and menthol—was supplied to some units. It is applied to the toes and feet in the morning and seems to be effective to a certain extent against jiggers.

Dhobie Itch.—The patient complains of severe pruritus in the inguinal and scrotal regions. Examination shows red festooned patches. Microscopical examination of scrapings reveals segments and filaments of fungus: usually *epidermophyton cruris* or *trichophyton rubrum.* The number of soldiers thus affected was fairly high in Somaliland and in certain regions of Eritrea, but none of the soldiers was laid up. This disease was fairly common in some of the ships at Massawa, and some small epidemics occurred, but were not of much importance, because none of the sailors was obliged to go off duty on account of it.

As a preventive measure, powdering the parts with boracic acid or some similar preparation was used. As a curative measure a salicylic carbolic ointment gave good results. In some cases, my fuchsin paint was used.

Chelitis Crustosa.—We had a rather large number of cases of this condition, but no soldier affected with it had to go into the hospital or give up his work. The patient complains at first of a slight itching or discomfort, or pain in his lips, generally the lower lip, on which a slight oozing may be noticed. Usually the lower lip only is affected, occasionally both lips. The oozing rapidly increases and the exudate dries up in thick yellow crusts, which may at times take a rupioid appearance. In bad cases the patient may find great difficulty in speaking, eating and drinking. The condition lasts usually for two or three weeks, but in some cases the course may be much more prolonged. The cause is to be found in the ordinary pyogenic cocci multiplying in the tissues, which have been irritated by constant exposure to the heavy dust present in so many regions where the war was fought.

The treatment is as follows: in mild cases simply touch the lips with rectified alcohol—it burns a bit, but the burning soon disappears—then apply plain glycerine or boric vaseline. In severe cases, hot boric fomentations should be applied several times daily, to remove the crusts, and then apply an ointment consisting of salicylic acid (5 gr.), vaseline (1 oz.); or salicylic (5 gr.), carbolic acid (5 gr.), vaseline (1 oz.); or white precipitate (5 gr.), carbolic acid (3 minims), vaseline (1 oz.).

Prevention would consist, of course, in avoiding the dust, which, however, is impossible in practice. A good measure is to apply regularly to the lips a little pure glycerine, or better still, cocoa-butter. Some soldiers when marching used to protect their lips with a handkerchief which was made into a knot at the back of the neck. It is interesting to note that a similar procedure is followed by the cowboys in the dusty desert regions of Texas and Arizona.

Summary

The state of health of the troops during the war (and I may add before and after the war period) was always excellent. In fact—and

this is almost incredible—the mortality and morbidity of the Army in Africa were somewhat less than the mortality and morbidity of the Army in Italy during the same period. In all previous colonial wars in the tropics, in which white troops have been employed on a large scale, the mortality from disease has been appalling.

In the Italo-Ethiopian War the number of deaths from disease was much lower than the number killed in battle and deaths from wounds; and considering that the number of killed in battle and deaths from wounds—thanks chiefly to the strategy of Field-Marshals Badoglio, Graziani and de Bono—was relatively very small, the results are remarkable.

The following table shows the losses sustained by the national white troops, which numbered approximately 500,000 men, during the war:

DEATHS DURING THE ITALO-ETHIOPIAN WAR
(*3rd October*, 1935—*9th May*, 1936)

On the field or died from wounds		*From Disease*	
Officers	119	Officers	22
Men	980	Men	577
Total ..	1099	Total ..	599

It must be noted that in the official reports the column, "Deaths from Diseases," includes also deaths from any injury not caused directly by the enemy, e.g., deaths from motor accidents, from drowning, etc. The exact number of deaths from disease (officers and men) was 516. It must be noted, also, that the figures given in the table are based on fortnightly statistics and cover the period 1st October, 1935, to 10th May, 1936; therefore, the mortality during the war period given in the table is, in all probability, slightly higher than the actual one. According to the experience of previous colonial wars in tropical countries, in which white troops were chiefly employed, deaths from disease in the Italian Army should have been more than 20,000.

In correspondence from Addis Ababa (*United Press Red Letter*, New York, 11th July, 1936), Mr. James L. Rohrbaugh, Correspondent of the United Press of America, an eye witness, said: "It is obviously no exaggeration to say that one of the prime reasons for Italian success was the continued health of its Armies, due to the efficiency of their medical service. It also might be observed that medical science made it possible for white people to live in unhealthy climates under adverse conditions, and to remain in better health than natives acclimatized by hundreds of years of continuous abode."

AIRCRAFT SUPPLY, 1914-1918

By WING-COMMANDER G. W. WILLIAMSON, O.B.E., M.C., M.Inst.C.E., M.I.Mech.E., M.I.E.E.

IN view of the great efforts which are now being made to place aircraft production on a war scale, it may be of interest to recall the slow growth of aircraft output during the late war, and to note some of the ways in which history seems to be repeating itself.

In the early days of the War, with only five squadrons in France, supply was not difficult. When an aeroplane was lost or destroyed, a telephone call to a contractor or to the Royal Aircraft Factory at South Farnborough would result in the delivery of another after a prolonged interval, gradually reduced as the factories got into their stride. There were no difficulties about design ; orders were always in the same terms —" the same again, please." If an aircraft maker had a bright idea, he either put it into his next aeroplane, or left it out, as the result of a telephone conversation with any pilot of his acquaintance. No machine guns were required, as aircraft were intended only for reconnaissance ; engines, ordered one at a time, came to hand almost as soon as aircraft. With only about three instruments on the dashboard, one flew by the look of the horizon, the wind on one cheek or the other, or a bit of string tied to a strut ; gyro instruments were unheard of, and blind flight an impossibility. Squadrons were staffed almost entirely by skilled men, and carried out their own repairs as far as possible ; a proportion of old crocks were flown home for repair, and the same pilot brought out the replacement, sometimes the same day.

In 1915 it occurred to someone that it would be a good thing to order aircraft in increased numbers before they were actually needed, and in both the Military Wing and the Naval Wing (afterwards the Royal Naval Air Service) a couple of pilots would go round the contractors and order a few aircraft of any type which looked promising. There came a day when Major Trenchard and Lieutenant Vere Bettington, greatly daring, ordered a hundred French aircraft at once.

To carry out the paper-work of ordering, a small Department was formed at the War Office, styled the Directorate of Aeronautic Equipment. It began with trained staff officers, but as they moved to higher posts it took on crashed or wounded pilots—the more seriously wounded the better, because then these quondam staff officers would not go back to France quite so quickly ; all were qualified pilots, and almost all had flown in France. But despite the theory that only pilots possessed

organizing and administrative ability, the supply of engines in 1916 was far behind that of the simple wooden aircraft of those days. Repairs of aircraft became uneconomical, and repair of engines impossible, as insufficient spares had been arranged.

Engines were required in France more urgently than complete aeroplanes. The pilot who crashed a brand-new machine on arrival at St. Omer was a public benefactor if the engine was undamaged, but otherwise fit only to be shot at dawn, because an undamaged engine could at once be installed in some well-loved, perfectly tuned, but battered old air frame with whose idiosyncrasies its pilot was thoroughly familiar.

But the supply of engines depended upon orders which had not been placed in time; and upon the supply of certain limiting components which had not been ordered in bulk at all. The supply of German magnetos had become exhausted; there was a shortage of ball bearings; aluminium for crank cases was needed so badly that it could not be used for other components; and even piston rings were not available in sufficient quantity.

Supply Personnel

Towards the end of 1916, war-weary pilots were still in charge of sections and branches; engine deliveries amounted to about a hundred monthly, and aircraft frames much more; and a solitary non-flying officer, styled an Equipment Officer, joined the Supply Staff.

Organization began, and muddle ceased, with the arrival of the late Brigadier-General Conway Jenkins, C.M.G., C.B.E., then a young Staff-Captain. He was a daring pilot, an engineer, abounding in energy, and a remarkable organizer. In only a few days, he drafted an establishment ten times as big as the pre-existing Supply Branch, and at once began to fill it with engineers. At first, they were pilots recalled from France or other flying work, who were known to have engineering training and experience. Later, he took on engineers from civil life, and had them commissioned as Equipment Officers. None was taken from the aircraft firms, but a large number from automobile engineering. Some of the newcomers were elderly men, but engineers of standing; yet they were, of course, commissioned in the lowest rank—2nd Lieutenant, and became responsible to young pilots who had been in the Service for at least a year.

However, the vitality of Conway Jenkins penetrated to the furthest corner of his enlarged Department, and it was not long before the tired pilots were found ground jobs unconnected with aircraft production, and engineers were no longer underlings.

No Long-Term Planning

The results of haphazard ordering soon became apparent. There was not even a programme showing the delivery promises made by contractors, and when this was compiled from the contracts it was realized that it did not really show what was happening as some contractors had promised large deliveries in the hope of getting increased orders. Resident production engineers were then appointed to assist the contractor in his dealings with the War Office, to assess his probable output for months ahead, and to see that there were no more gaps between orders.

The worst feature of lack of production control was that as there were no programmes of probable output of air-frames and engines, there were also no programmes of requirements of those components which also limited the production of the finished article. It had, apparently, been nobody's work to see that magnetos, ball bearings, piston rings and spare parts had been produced in proportion to engine and airframe output.

But while the Royal Flying Corps had been slowly building up a staff capable of handling production problems, the Admiralty Air Department, staffed from top to bottom with engineer-officers, had made airframe and aero-engine contracts with all the best firms. So the Royal Naval Air Service was pretty well off in both engines and aircraft ; in addition, their supply staff had started more than one firm on the manufacture of magnetos in this country, to make up for those formerly imported from Germany. The Admiralty agreed to let the War Department have a large quantity of their magnetos, but they could not help with other deficiencies, and were averse to supplying complete engines or aeroplanes, lest they should need them later in the War.

Co-ordination of Supply

The result was that, while the R.N.A.S. had a considerable surplus, the R.F.C. in France was vitally in need of aircraft. This state of affairs, combined with competition between the R.F.C. and the Tank Corps for the services of certain engine makers, led to the formation of the Air Board. It united the Supply Staffs of the Admiralty and War Office, and towards the end of 1917 controlled an output of over two thousand aircraft and engines monthly. Sir William Weir, now Lord Weir, became Director-General of Aircraft Production at an early stage.

This powerful Supply Department soon began to look out for fresh sources of production, and at once came into conflict with the Ministry of Munitions which for over a year had been controlling all technical supplies except those for aircraft. After one year's life as a separate entity, the Supply Department became part of the Ministry of Munitions about the time that the Royal Air Force was born in April, 1918.

A civilianized Directorate was no place for Conway Jenkins, by this time a Brigadier-General; and long before the next emergency arrived he saw it coming and began to organize the Directorate of Parks and Depots to deal with it. When he came to take over Supply in 1916 his command consisted of about ten pilots and three clerks; when he left, late in 1917, it had three hundred and fifty engineers, and over four hundred clerks or technical civilian assistants.

This new problem was how to deal with the increasing congestion of air-frames—aeroplanes without engines—at the works of their makers. For years airframe production had been far greater than the output of engines, and the works were becoming jammed with thousands of them: they took up space that should be used for production, and their mere presence there, apparently not needed for the war, resulted in a slackening of effort on the part of workpeople.

To deal with this, fifteen Aircraft Acceptance Parks were organized and built close to the works of the great contractors. The Parks received the airframes from the makers as fast as they were produced, and carried out all the work the makers could not undertake. The airframes were either stored or erected and fitted with engines, guns, and instruments: flight tested, and delivered to France or to the Training Command by air. At the end of the War, about three thousand aircraft monthly were being turned out by the Acceptance Parks.

The Same Mistakes

Airframes of to-day must be five times as complex as those old wooden ones, and although in war mass production of their components is probable, erection may take longer than ever. Engines are three times as complex as they were, at a rough estimate, although machining methods have improved. Supply is not so easy now; yet we have been making exactly the same mistakes as in the past: control of aircraft production by serving officers or by a few civilian engineers with but little aircraft experience; engineer-officers rather at a discount, both in the Air Ministry and throughout the R.A.F.; no long-term planning, owing to our annual budget system; essential components such as blind-flying instruments or gun turrets not produced in time; gaps in orders, sometimes owing to lack of foresight, or to demands for deliveries larger than the aircraft output required; no Acceptance Parks; and no arrangements for repair of engines or aircraft on the scale required by war.

Some of these points have been put right, and others are in process of being remedied. But consideration may still be necessary of the situation which could arise in the works of aircraft manufacturers should there be a great discrepancy between deliveries of engines and those of aircraft as in the late war.

THE TRANSFER OF THE FLEET AIR ARM

By Rear-Admiral H. G. Thursfield

THE decision to transfer the Fleet Air Arm from the dual control under which it had worked since 1923 to the sole control of the Admiralty was announced by the Prime Minister in the House of Commons on 30th July, 1937.[1] The following extract from his statement contains the guiding principles to be followed in giving effect to this decision :—

" The proposals the Government have had under consideration refer to two classes of aircraft. The first class includes all aircraft borne in ships of the Royal Navy. These are known as the Fleet Air Arm. They are under the operational control of the Admiralty, but as part of the Royal Air Force they are under the administrative control of the Air Ministry. The second class includes shore-based aircraft employed in co-operation with naval forces. These are under the operational as well as under the administrative control of the Air Ministry.

" Under one proposal which has been before the Government the Admiralty would in each case have been given both the administrative and the operational control and the whole of the personnel would be naval. The Government have decided, however, that in the case of the second class, namely, shore-based aircraft, which term includes flying boats, there shall be no alteration in the present system. In the case of the Fleet Air Arm the Government consider that these ship-borne aircraft should be placed under the administrative control of the Admiralty. The necessary steps to give effect to this decision will be taken.

" The change can only be carried out gradually, and with the fullest co-operation between the two Services. The same close co-operation between the Services is indeed vital in the whole strategic field where both ships and aircraft are concerned, and I am happy to give the assurance that this co-operation will be forthcoming without reserve."

In reply to questions following this statement, the Prime Minister also stated that, in principle, the Fleet Air Arm would have the shore establishments it needed, which would be under the Admiralty.[2]

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[1] See " General Service Notes " in the Journal for August, 1937, p. 633.

[2] Note.—This does not effect the principle of the control of " shore-based aircraft." These naval air establishments are required for the housing of Fleet Air Arm personnel and the maintenance and overhaul of aircraft belonging to the Fleet, but not embarked, in the same way that shore establishments and dockyards are required for other naval personnel and for the ships.

Before the gradual transfer thus announced can be completed, the Navy must, of course, provide itself with the personnel necessary to replace that of the Air Force hitherto employed in the Fleet Air Arm, together with that which will be required at the shore air stations which are to be taken over. It thus requires a large addition to the number of Pilots, together with the creation of a class or classes of naval ratings qualified to undertake the maintenance, overhaul and repair of aircraft—work which has hitherto been in the exclusive province of the Air Force. The need for an increased number of Pilots is enhanced by the facts that a large expansion of the Fleet Air Arm itself is now in progress, and that it is necessary to build up a reserve of Pilots, now that those of the Air Force who have served in the Fleet Air Arm but afterwards reverted to general duty in the Air Force will no longer be even nominally available. An essential preliminary to all these measures was the creation of the organization within the Admiralty to devise, introduce and administer them.

On 10th August, 1937, Rear-Admiral J. H. D. Cunningham, hitherto Assistant Chief of the Naval Staff at the Admiralty and the Member of the Board who had been dealing with all Air matters within the Admiralty, was appointed " Assistant Chief of the Naval Staff (Air)." This change of title indicated a change in organization by which he devoted all his attention to air matters, all other duties of his previous office being taken over by a newly appointed Assistant Chief of the Naval Staff, who is not a Member of the Board. Admiral Cunningham's title was afterwards changed to " 5th Sea Lord and Chief of Naval Air Services." He continued to hold the office until July, 1938, when he was relieved by Vice-Admiral Sir Alexander Ramsay, who had previously, both as Captain and Rear-Admiral, held commands in the Fleet Air Arm.

In January, 1938, the appointments were announced of Captains as Director of Air Material and Director of Air Personnel in the Admiralty. This indicated the creation of administrative departments for the Fleet Air Arm ; hitherto the only organization within the Admiralty concerned with air matters had been the Air Division of the Naval Staff which in practice had had perforce to concern itself with matters of administration as well as staff duties. The following month the appointment was announced of a Captain (E) as Technical Adviser to the Chief of Naval Air Services. The officer appointed had had previous experience both of the Fleet Air Arm and of work at the Admiralty.

Provision of Pilots

Under the previous regime the only naval Pilots available have been naval and marine officers who have specialized in flying. This system

continues, but three new measures have been adopted for increasing their number and for building up a reserve. Officers are being entered in the Navy on Short Service for air duties alone ; an Air Branch of the Royal Naval Volunteer Reserve has been created ; and a number of lower-deck ratings are being trained as Pilots.

The Naval Air Branch

On 17th February, 1938, the institution of the " Naval Air Branch " was announced. Commissions in this are for a period, in the first place, of seven years. Candidates must be unmarried, between the ages of 17½ and 23, satisfy a stringent physical standard, and hold an educational qualification not inferior to School Certificate.

For candidates who are accepted, the first year of service is probationary and the first two years are devoted to training. Those entering under the age of 22 are rated Midshipman (A), and are promoted to Sub-Lieutenant (A) at 22, or at any age above 20 if they have satisfactorily completed their training. Those entering at or above 22 become Sub-Lieutenants on entry. It is thus possible for officers of the (A) Branch to go to sea after training as Midshipmen, but they will not spend more than a year at the outside at sea in that rank. Sub-Lieutenants (A) will be promoted to Lieutenant after two years service, provided they are recommended.

Officers of the (A) Branch will be employed on flying duties, both afloat and at naval shore air stations. Their position and status is very similar to those of officers of the Royal Marines. They exercise full powers of command within the Fleet Air Arm—which term includes any shore air station under naval administration—but they are not eligible to command sea-going ships. Their duties are defined to be :—

(*a*) Flying, administrative and specialist duties within the Fleet Air Arm, and staff duties in respect of air matters.

(*b*) When not required for duty in connection with aircraft, such general ship's duties, including watchkeeping in harbour, as the Captain may consider them fit to perform, having regard to their rank, seniority, training and experience.

Commanding Officers are enjoined to arrange that they shall receive the training necessary for these latter duties (A.F.O., 1912/38).

Officers of the Air Branch wear the ordinary uniform of their rank, with the addition of the Air Branch badge—a capital " A " in silver surrounded by a laurel wreath of gold embroidery—immediately above

the gold stripes of rank on the sleeve or shoulder straps.[1] The rates of pay, flying pay, and allowances, including marriage and children's allowance, are the same as for officers of corresponding ranks on the ordinary lists.

The first period of service will, as already mentioned, be for seven years, which will normally include at least one period of foreign service. At the end of the first period, officers will be transferred to an " Emergency List " for another eight years, during which they will be liable to be called up in war or emergency as are officers in other branches of the Reserves. Those so transferred receive a gratuity of £600; if they undergo periodical naval training and keep themselves in flying practice, they will receive a retaining fee of £25 a year.

Some, however, will be required for duty in higher ranks. Those who volunteer to continue on the Active List, and are accepted, will serve for another eight years, being promoted to Lieutenant-Commander (A) after eight years as Lieutenant (A). On the completion of the second term of service, the retiring gratuity will be £1600. Some few may be retained even longer; if so, they will be eligible for a pension at the age of 40, or after twenty years service. Promotion to the rank of Commander (A) will be made in special cases; and, as it afterwards appeared, though not originally announced, that is not the highest rank which (A) officers can reach.

The first new entry of (A) officers from the shore cannot become available for service for two years, but the branch is being constituted forthwith with officers formerly in the Air Force. Air Force officers have been permitted, with the approval in each individual case of both the Air Ministry and the Admiralty, to transfer to the Naval Air Branch, their rank and length of service with the Air Force being taken into account in fixing the naval rank and seniority granted to them on transfer. One officer, Wing Commander B. L. Huskisson, D.S.C., was transferred as a Captain (A) with seniority of 1st September, 1938. The latest Navy List shows thirty-one Lieutenants (A) and fifty-eight Sub-Lieutenants (A) transferred from the Air Force. Many of these officers have, of course, considerable experience already of the Fleet Air Arm, and they were presumably assigned at once to full duty. Some of the remainder may have still, at the time of transfer, been in process of undergoing specialized Fleet Air Arm training, which must be completed before they are available for full duty. But new entries from the shore have, of course, to undergo the complete course of two years' training.

[1] It is understood that the retention of the much-prized " Wings " which has hitherto formed part of the uniform of naval officers in the Fleet Air Arm is under consideration.

The first batch of forty probationary officers joined H.M.S. "Hermes," aircraft carrier in reserve at Devonport, on 19th April, for a two months course of elementary naval instruction, designed to introduce them to naval routine and life on board ship, combined with elementary instruction in their naval air duties. From there they passed in June to No. 23 R.A.F. Elementary and Reserve Flying Training School at Rochester for elementary flying training. Intermediate and advanced flying training takes place at No. 1 R.A.F. Flying Training School at Netheravon—whither it has been transferred from Leuchars—followed by special Fleet Air Arm training in a training carrier.

R.N.V.R. Air Branch

The formation of the Air Branch of the Royal Naval Volunteer Reserve was announced on 17th November, 1938. Its constitution follows very closely that of the Naval Air Branch except, of course, that the members of it do not serve continuously. Entrants must be unmarried, between 17 and 23, and must reach the required physical and educational standards. Their initial training, which lasts only eighteen months as against the two years of the Naval Air Branch, is the only continuous part of their service, except, of course, when the Reserves are called out in the event of war or emergency. At the end of it they will be considered available for service during the ensuing ten years, during which they are required to keep themselves in flying practice—not less than twelve hours flying in each year—and to undergo periodical naval training, either a fortnight annually or a month biennially.

The R.N.V.R. Air Branch will also include Observers, who will be trained in air navigation and other forms of naval air work. The latter training no doubt includes instruction in the appearance of ships of war, and in tactical movements, knowledge of which is indispensable to a naval air Observer. Observers' conditions of service are similar to those of pilots except that their annual training during their ten years availability is to last twenty-eight days, of which at least fourteen days is to be continuous; the remainder may be taken at odd times as convenient.

At the end of the ten years, officers may volunteer for further service in the R.N.V.R. Air Branch; those accepted will be employed on ground duties only.

Rank in the R.N.V.R. Air Branch depends on length of service, under rules very similar to those of the Naval Air Branch; pay, when embodied either for training or service, is the same. There are also gratuities; £150 on satisfactory completion of training, subject to an undertaking, under penalty of partial refund, to complete not less than four years of the periodical training prescribed; £25 for each year's

periodical training and practice completed ; and outfit gratuities of £25 on entry and on satisfactory completion of the probationary period. There is also provision for compensation for injuries received on service.

Lower-Deck Pilots

The extension to the lower-deck of the opportunity to qualify as Pilots was announced on 5th March, 1938. Candidates must be between 21 and 24, must have passed the Higher Education Test, and be up to the R.A.F. physical standard in all respects. They are taken chiefly from the seaman and communications branches, but men from other branches, if accepted for Pilot, are allowed to transfer to the seaman branch for the purpose.

The initial training of lower-deck Pilots occupies a year ashore, followed by eight weeks in a training carrier. Those who qualify will be rated Petty Officer, if not already of that rate, and will be available for full flying duties. While so employed, they draw flying pay of 5s. a day in addition to the substantive pay of their rank. The normal period of flying duty will be seven years, reckoning from the beginning of the training period, but it may be extended if pilots volunteer for it and are found fit.

Twenty ratings were selected for the first batch in June, 1938. They received elementary flying training at No. 23 R.A.F. Elementary and Reserve Training School at Rochester, and then passed on to No. 1 R.A.F. Flying Training School at Netheravon. Further batches are passing through their training periodically, but none, of course, has yet completed it.

Maintenance Personnel

Technical Officers.—Technical officers for the Fleet Air Arm are to be provided partly from the Engineering Branch and partly from the Air Branch. The former will be drawn from Lieutenants (E) of not more than two years seniority. They will do two years training, the first being devoted to a full flying course, the second to flying practice and the study of aeronautical engineering ; they will then serve for a year as Pilot in a catapult ship. After the year as Pilot they will be appointed for technical duties in the Fleet Air Arm, and after two appointments in that capacity will revert to general (E) duties until again required for Fleet Air Arm technical duties in a higher rank.

Officers of the Air Branch selected to qualify for technical duties will do a two years course of technical training after completing one full appointment for full flying duties. After qualification, they will be

employed continuously on technical duties and will be retained in service, normally, until qualified for pension.

In order to make immediate provision for technical officers pending the qualification of those enumerated above, a few more senior naval engineer officers are being trained in aeronautical engineering, but they will not be trained in flying (A.F.O., 1856/38). Three officers—a Commander (E), a Lieutenant-Commander (E), and a Lieutenant (E), were appointed on 6th August, 1938, to the R.A.F. School of Aeronautical Engineering at Henlow.

Ratings.—Several new rates have been introduced into the Navy in order to provide for the maintenance of aircraft. They are of two classes, skilled and semi-skilled.

There are three skilled rates—Air Artificer, Air Fitter, and Air Rigger. Of these, Air Artificers correspond to Engine Room and other Artificers already serving, whereas Air Fitters and Riggers have no precise equivalent in other branches of the Navy. All three will enter as Air Apprentices, under the same conditions as other Apprentices, and after three years in the training establishment will go to sea as Air Fitters or Air Riggers, ranking with Able Seamen. After two years at sea, they will be qualified, on recommendation, for Leading Air Fitter or Rigger, and at this stage 50 per cent. will be selected to qualify, by a further year's training, as Air Artificer. About another 10 per cent. will be selected later from Leading rates; the remainder, not selected, will be eligible to rise to the rates of Petty Officer Air Fitter (or Rigger) and Chief Petty Officer Air Fitter (or Rigger). Those who qualify for the Artificer Branch become Air Artificer 4th Class (the equivalent of Petty Officer; the higher classes are all Chief Petty Officer rates). Air Fitters deal with aero-engines, Air Riggers with air frames; Air Artificers with one or the other according to their trade qualification.

The semi-skilled ratings are entitled Air Mechanics; they are divided into four trades—Engines (E), Air Frames (A), Ordnance (O), and Electrical (L). They will be drawn from Able Seamen and Stokers under the age of 28 who have passed the Educational Test Part I and have not taken up any other speciality. Men accepted will undergo a course of technical training of about a year, at present at an Air Force establishment, but at a Naval Air Training establishment as soon as one is available. On conclusion, if they succeed in qualifying, they will be rated Air Mechanic—ranking with Able Seaman, and will be employed in Fleet Air Arm units. They will be eligible to rise through Leading and P.O. rates to Chief Petty Officer Air Mechanic. New entries into this branch from the shore will be styled Air Mechanic Probationer while under training.

Pending the supply of these maintenance ratings by the processes outlined above, a certain number are being provided by voluntary transfer from the Air Force. Men so transferred retain all the benefits of the service they already have to their credit in the Air Force, which counts towards badges, Long Service Medal and pension. They receive a free issue of kit on transfer. Fitters I in the Air Force become Air Artificers; Fitters II become Air Fitters or Air Riggers according to trade; Flight Mechanics and Flight Riggers become Air Mechanics.

Aerodromes

It has been stated in the Press, but without official authority, that the aerodromes to be transferred to the Admiralty are those at—

Lee-on-the-Solent,
Ford,
Worthy Down, Winchester,
Donibristle, Fife,

and that the transfer is to take place by 1st April, 1939. This report may or may not be correct, but it seems unlikely that such limited accommodation will be adequate for this rapidly expanding service. Moreover, it is hardly credible that Gosport should not be one of the stations to be transferred. According to the Navy List for long past, the Fleet Air Arm Training Squadron has been located there, and it has always been understood that the station was used wholly for Fleet Air Arm work. It is in such close proximity to all the principal naval establishments which are located at Portsmouth that the desirability of its selection as one of the naval air stations is clearly indicated on grounds of common sense if no more, and it is so close to Lee-on-the-Solent, which apparently is to be transferred, that it would seem hardly practicable to place them under separate control.

The Press report also stated that a Flag Officer is to be appointed in command of the naval shore air stations.

It will be noted that the Prime Minister's pronouncement that the change could be carried out only gradually has, so far, been fully borne out.

NOTE

For the official announcement of later developments see "Fleet Air Arm" in Navy Notes of this JOURNAL.—EDITOR.

DEVELOPMENT OF SERVICE ARMS

THE TOWER COLLECTION

By MAJOR C. FFOULKES, C.B., O.B.E., Hon. D.Litt., F.S.A.

DURING the latter part of the XIXth Century when the breech-loader was becoming a practical proposition, students of Service arms were faced with serious difficulties in pursuing their investigations. Each European nation had its government museum or arsenal in which such weapons could be studied with more or less convenience ; but in England incomplete series were scattered in far distant localities. The Tower, which had been the national arsenal for centuries, preserved sealed patterns of Service arms up to about 1859 when the small arms factory at Enfield was established, and thenceforward preserved examples of all experimental pieces sent in for examination after that date. Weedon, being the small arms store, duplicated this to a certain extent, while the Rotunda at Woolwich duplicated many of the earlier pieces in the Tower with the addition of many French arms captured after Waterloo. The practical comparison of all these weapons was, therefore, impossible and the difficulties of travel and of obtaining official passes to Enfield and Weedon disheartened students to such an extent that except for a few cultured amateurs the study of military arms died of inanition. A new factor arose with the institution of the Imperial War Museum in 1917 which collected the arms of all the belligerents of the war of 1914–18, and this added still further to the students' difficulties.

About the year 1924, the present writer suggested that something should be done to rectify this somewhat chaotic state of affairs, and in 1927 the War Office appointed a committee under the chairmanship of Lord Cottesloe to consider the scope of the military museums under Government control. This committee consisted of representatives of the Enfield Small Arms Factory, the Tower, the Rotunda, Woolwich, and the Imperial War Museum, all of whom agreed that each of their collections should furnish examples to make one complete series. The suggestion was that the Tower should confine its activities to periods up to and including the period of Marlborough's wars, and that the War Museum should carry on from thence up to the late war and should be prepared to illustrate the equipment of future wars. Woolwich was to

become an Artillery Museum and would transfer to the Tower its valuable collection of early arms and armour and would add its small arms to the proposed " pool " in the War Museum, Enfield and Weedon confining themselves to technical exhibits required for experimental purposes but of no special historic value With public spirited generosity both the above-named institutions and the committee in charge of the Rotunda agreed to the proposal without any reservations, but the Royal Commission on Museums which, strange to relate, included no naval or military members, insisted that the War Museum must be confined to the years 1914–18.

In the meanwhile a collection was gathered from the Tower, Woolwich, Enfield and Weedon, of about seven hundred pieces, British and Foreign, giving as far as was possible a concise series showing the development of firearms from about 1700 to 1914; but, for want of adequate exhibition space, these remained in store till 1938 when the Brick Tower in the precincts of the Tower of London was prepared for their reception. This is not open to the public, but all students are welcomed and are given every facility for study. The weapons, many of which are sectioned, can be handled, weighed and calibrated, and the patent specifications can be consulted in the same building.

The following is a brief review of the evolution of the modern service rifle as illustrated in this collection. The flint lock needs little explanation, but it is worthy of note that the trigger pull was estimated at 31 lbs., and the foresight, for practical purposes merely a bayonet stud, was frequently worn out with use and was totally obscured when the bayonet was fixed. The calibres of Service arms in the XVIIIth Century varied from 0.684 to 0.755, and this continued more or less till 1834, but it was not till 1860 that we find a definite order for " interchangeable parts " which is described as " an incalculable advantage for a military arm, *particularly in the field.*" About the year 1860, in a survey of a large number of flintlocks in the Museé d'Artillerie, Paris, it was found that 340 were of different calibres and varied in barrel length from 20 to 39 inches, while there were over twelve systems of rifling varying from two to twelve grooves. In 1807, the Rev. Alexander Forsyth produced his epoch-making percussion lock for which, according to tradition, Napoleon offered £20,000. It was, however, too delicate and costly for practical use, and at once other gunmakers devised improvements upon it. The famous Joe Manton tried tubes filled with detonating powder in 1816 and 1818; Webster improved on Forsyth's lock in 1821; and in the same year Westley-Richards and others experimented with pellets. Maynard and Heurteloup in 1841 produced detonating tapes fed from a wheel, the hammer automatically cutting off each section as it was

exploded. All these contrivances were for the most part dangerous to carry as the detonators in pouch were liable to explode on impact ; and it was not till the copper cap was discovered, or rather evolved by degrees, that the percussion musket became a practical proposition. Many gunsmiths have claimed this invention : Shaw, a landscape painter of Durham, who emigrated to Philadelphia, Westley Richards of Birmingham, Pauly of Paris and Joe Manton, each within a few years produced caps which could be conveniently carried in a pouch and were impervious to weather. At long last the percussion rifle and later the percussion musket were converted from flint locks and issued to the Army, the former in 1839 for the Rifle Brigade, and the latter for Line Regiments in 1840. In or about 1842, the block sight was introduced, and in 1853 the scaled backsight.

Muzzle Loading Rifles

This brings us to the rifle which, although the principle had been discovered in the XVIth Century, was not adopted for Service purposes till 1742, when Robins produced his "New Principles of Gunnery." In 1800, Ezekiel Baker submitted a rifle which was adopted for the Rifle Brigade. The chief difficulty of the muzzle-loading rifle was that the ball had to slip easily down the barrel and yet on the explosion of the charge had to spread into the grooves of the rifling. Several expedients were tried, Delorgne with his reduced chamber in 1826 and Thouvenin with the pillar breech both attempted to get over the difficulty. In the former case, while the powder charge filled the chamber, the ball could be rammed home on the chamber edge and the same process could be adopted on the pillar of the latter. The main objection to these contrivances was the fouling of the breech and the impossibility of cleaning out the residue. Then came the so-called " Brunswick " two-grooved rifle with a belted ball which fitted into the grooves, but here the objection was that the least damage to the belt of the ball hindered rapid loading. Both the Baker and Brunswick rifles had side-brackets to take a sword bayonet so that the foresight could be used with the bayonet fixed.

Various types of bullets were put forward which could be loaded at the muzzle and would expand on discharge. In 1823, Captain Norton exhibited an " elongated and expanding shell," and in 1836 Greener produced what was described as " the first public suggestion of the principle of expansion," a ball with a tapered plug which on discharge forced the bullet into the rifling. In 1847, Captain Minie produced a " cylindro-ogive " bullet with an iron cup in the base, changed afterwards for a boxwood and later a clay plug. This bullet was based on Greener's principle, and a number of smooth-bore muskets were rifled

to suit it and issued to troops in the Crimean war. As there were complaints about the difficulty of loading, a simpler bullet was produced in 1852 by Pritchett & Metford, and in 1855 all the smooth-bore muskets were rifled for this bullet and were known as the " Enfield Rifle." In the meanwhile, Whitworth suggested a hexagonal bore and bullet of which 8000 were made but never issued. As the rewards for industry, Norton, the first maker of an expanding bullet, received nothing, Greener £1000, Minie £20,000, and Whitworth £12,000. Between the years of 1823 and 1860, over fifty different types of bullets for muzzle-loading rifles were produced. But all these contrivances were at best makeshifts, for the breech-loading firearm was, so to speak, " in the air," and the patent specifications show that all gunmakers were working to this end.

If all these craftsmen from Ezekiel Baker of 1800 onwards had visited the Tower of London they would have seen two carbines made for Henry VIII with " Snider " breechlocks, in which case the military history of this country during fifty years might have been considerably altered. Even the revolver and magazine gun had been the subject of early experiments, for the Tower collection shows a four-chambered matchlock of the XVIth Century and revolver and magazine arms of the XVIIIth Century culminating in Puckle's famous machine gun ; and yet no inventor took serious note of these pieces. The obvious reason for this neglect was, of course, the absence of the gas-tight cartridge, for all these arms were loaded with loose powder or at best paper wrapped powder, and they were fired with match or flint on priming powder. Ferguson's breechloader which consisted of a vertical screw plug actuated by a trigger-guard lever was used in the American War of Independence, but was never adopted in this country, and in 1803 both Durs Egg and Searles produced breechloaders, but none of these could be made gas-tight.

The Breechloader

Always economical, the War Office decided that the Enfield rifle must be made the basis of any new invention, and to this end called for specimens, of which 150 were sent in. That the large majority of these did not conform to the conditions for Service weapons is proved by the final adoption of the breech-loader invented by Jacob Snider—an American wine merchant. There were several drawbacks to this action ; the completed rifle was heavy, there was at first no lock to the breech with the result that with a faulty cartridge the breech cover was blown open ; and worst of all the extractor was so faulty that the arm had to be turned upside down to release the spent cartridge. Sharp,

Terry, Westley-Richards and Mont-Storm all submitted patterns of carbines which were issued to cavalry regiments for testing, but the Snider system was eventually adopted for all Service arms in 1866–67. In the meantime European nations were experimenting on the " door-bolt " breechloader. In 1848, Prussia favoured the needle-gun, but changed a few years later to the Mauser. France, starting with the Chassepot in 1846, adopted the Gras, Belgium the Beaumont, Italy the Vetterli, and Russia the Berdan, while a different system with lifting breech, the Brændlin, was the chosen weapon of Belgium, and the Springfield of the United States. All these were new and not converted weapons, while the British Army had during forty years been economically minded. They had converted the flintlock to percussion, then rifled the smooth-bore barrel, and finally added the Snider breech to the old barrel. At last, in 1870, an entirely new arm was produced with a drop breech by Martini and the barrel by Henry, the breech action being based on the Peabody of 1862. Here it may be of interest to note the weight of the arm which the infantryman had to carry and fight with in addition to his often cumbersome uniform and equipment.

	lbs.	*oz.*
Flintlock musket with bayonet	11	4
Baker rifle with bayonet	11	0
Brunswick rifle with bayonet	11	5
Percussion musket with bayonet	11	6
Minie rifle	10	9
Enfield rifle	9	3
Snider rifle	10	7½
Martini-Henry	9	12
Lee-Metford Mk. I	10	7½

Magazine Rifles

The Martini breech was retained in 1886 when the Metford rifling was adopted for carbines and the same action was retained in the Enfield Martini rifle. But here again other nations were advancing still further with magazine or quick-loader weapons. The Spencer repeater appeared in 1860, and in the same year the Swiss adopted the Vetterli magazine system. In 1886, both France and Austria produced magazine arms, the former in the Lebel and the latter in the Mannlicher ; and two years previously Germany had converted their single shot Mauser into a magazine weapon. We were wise not to have been stampeded into following Europe too rapidly, but the fact that other nations were adopting magazine arms impressed upon the authorities the urgency of providing a similar weapon for the British Army. The year after the

adoption of the Enfield-Martini—that is in 1887—a Committee was formed, and as a result of their deliberations the Metford .303 barrel was associated with a bolt and magazine devised by Lee—a Canadian watchmaker, and after testing 350 rifles distributed throughout the Empire, the Lee-Metford magazine rifle Mk. I was adopted in December, 1888, which goes far to prove that when the official mind sets out to move quickly it can achieve most satisfactory results. But this was not the end ; for two years later another committee decided on further improvements, and in 1895 the Lee-Enfield was issued, and from this was developed the Short Magazine Lee-Enfield with its several improvements.

In this brief historical record, it would be presumptuous in the extreme to look into the future, and indeed the expert would hardly dare to visualize the weapon of 1950 for the conditions of warfare change so swiftly, especially with the advent of the air arm that none can see precisely how the infantry will be expected to act. It is certain that rapidity of fire, simplicity of action and portability must be of paramount importance, but we can rest assured that in the race for superiority this country will not be left behind.

In conclusion, it should be admitted that there are still gaps in the Tower collection, and if any collectors can assist to fill these their generosity will be greatly appreciated. The Brick Tower is essentially a students' exhibition and individuals or parties from one or other Service unit will be welcomed and will be free to study with no restrictions or needless regulations.

NOTE

The Royal United Service Institution has a collection of nearly four hundred muskets and rifles and a hundred and fifty pistols and revolvers illustrating the development of these weapons from the early XVIIIth Century to the present day. Most of these are on permanent exhibition in the Museum.—EDITOR.

THE ORGANIZATION AND TRAINING OF TERRITORIAL ARMY UNITS[1]

By Lieut.-Colonel H. C. H. Eden, M.C., *p.s.c.*, R.A.

In his lecture on the development of the Territorial Army, reproduced in the August number of the Journal, General Brownrigg pointed out how the functions and organization of the Territorials have changed and are still changing to meet the immediate peril that may threaten the nation at the time. The Territorial Force, as originally designed, was a third line of defence to be ready for service at home six months after embodiment. The modern Territorial Army is being charged more and more with first line duties in connection with anti-aircraft and coast defence whilst the remaining formations form the second line portion or "Main Body" of the whole British Army, the Regular Army being regarded as the "Advanced Guard" or "Spearhead."

The Secretary of State for War has recently laid down the role of the Territorial Army as being :—

(*a*) Home Defence. This includes defence against attack by air and coast bombardment.

(*b*) Defence of vital communications.

(*c*) The sole means of expansion of a National Army.

Every officer and man joining the Territorial Army now accepts liability for service overseas, although he cannot actually be sent abroad until the necessary authority has been given by an Act of Parliament. Such an Act could, however, be quickly passed and, since there is no mention of it being confined to a period of grave national emergency, units could be sent abroad at any time if it was considered to be in the country's interests. Modern methods of warfare aim more and more at the delivery of an early blow and the speeding up of all methods of attack. We shall not, as formerly, be able to afford to wait six months for the Territorial Army to train before it is ready to take the field. Anti-aircraft and coast defence units may be required to mobilize even

[1] This article was written prior to the reorganization of the Field Force component of the Territorial Army published in Army Notes for the November, 1938, Journal.—Editor.

before the actual outbreak of war ; whilst other units may be wanted at an early stage to assist in garrisoning naval, air, and mercantile bases on our Imperial Lines of Communication. The inclusion of these units in our first line of defence has made it necessary for them to be able to mobilize at war strength at very short notice.

A recent statement in the House of Commons has also shown the importance of the time factor in the Territorial Army's third role as the framework of a National Army. It has been stated by the Prime Minister that a National Service Bill is actually prepared, ready to be passed quickly through Parliament, in the event of the necessity arising. It therefore appears probable that, if Great Britain is involved in a major war at any time, the cadres and training centres necessary for expansion will have to be provided within one or two weeks of the outbreak of war. Units of the Territorial Army are, therefore, now given the important and difficult task of being ready both to take the field at short notice as a unit, and, at the same time, to throw off at an early stage those cadres of instructors and trained men required for the formation of a National Army. Such a responsible role requires careful organization and a high standard of Individual and Collective Training.

At the present time units are allowed to recruit up to ten or sometimes twenty per cent. above peace establishment but no increase is allowed in the establishment of N.C.Os and specialists such as signallers, or clerks for pay and " Q " duties. On mobilization a comparatively large number of these will be required both to raise the unit from peace to war establishment and to assist in providing instructors and cadres for national expansion. These men will have to be found from existing unit resources and trained by the unit itself. The specialist training of these men is bound to take a considerable time and effective collective and higher training cannot be carried out until they are ready. The methods of 1914 and 1915 are obviously too slow for the requirements of modern warfare. Any reorganization of the Territorial Army which may be contemplated should, therefore, include some method of speeding up the rate at which units can mobilize. It is probable that the limiting factor in this will be the rate at which the necessary equipment and vehicles can be issued. But, as the arrangements for this are beyond the knowledge of a regimental officer such as the writer, they are not dealt with in this paper which is concerned only with the organization and training of personnel. Units allotted to the first line defence of this country will presumably be maintained in peace at a strength approximating to their war establishment, and it is suggested that some such similar organization should be extended also to second line units.

It is doubtful, under the present voluntary system, whether any

form of reserve, apart from the Officer Reserve, would be worth the extra amount of clerical work entailed in keeping the necessary records, since a large number of trained men may be expected to rush to rejoin their old units as soon as embodiment is ordered. If National Service is introduced, Recruit Training Centres will have to be established at a very early stage and these should be able to sort out the trained men who are called up and post them quickly to their own units where they should be sufficient to fill the lower ranks to war establishment. It does not, therefore, appear necessary to provide a reserve for Territorial units or to maintain them in peace at full war establishment in the lower ranks. The maximum number of men should, however, be trained as N.C.Os, instructors, and specialists ready for war requirements. To ensure this some increase in the present establishment and emoluments is desirable. In providing instructors, N.C.Os and specialists for training centres and cadres, units will be mulcted of " key men " at a critical period and most of the valuable team work of peace time training will be wasted. Further, the time taken to provide a fighting unit, ready to take its place in the field army, will be seriously prolonged by the necessity of training men to replace the N.C.Os and specialists so withdrawn. It is therefore important, if time is to be saved, that units should be relieved of the responsibility of finding personnel for training centres and cadres from within the peace establishment of what I may term the " Fighting Unit." It is probable that the personnel for this purpose could be provided from officers and N.C.Os who had recently left the Regular or Territorial Army and had been earmarked for this duty in peace time. Such an organization, however, is unlikely to work smoothly or efficiently at the start since officers and men would be strange to one another and many would be behind the times in their knowledge of modern methods and material. This is a particular danger at the present time when methods of warfare and types of weapons and equipment are changing at such a rapid rate.

A Cadre of Instructors

There is plenty of material in the Territorial Army from which the necessary instructors for training cadres could be provided if given the necessary encouragement, instruction, and experience. It is, therefore, suggested that a number of officers and N.C.Os ,sufficient to form the framework of a training centre, should be included in the peace establishment of all Territorial units and that these should be in addition to the number required for the unit's war establishment. During the pre-camp training period these men would receive special instruction and would also gain experience by being made responsible for the training of

recruits and for taking classes as required in the unit. Their tour of duty as instructors should be for two years after which they would be re-absorbed into the " Fighting Unit " and their places taken by others, so as to ensure a constant supply of trained and experienced instructors within the unit as a whole. In scattered units they would, throughout their tour, remain in their own drill halls and work for the battery or company from which they had been drawn. To encourage men to become instructors all those who pass a test supervised by a Regimental Board should be allowed to wear a special badge and should be granted extra pay and additional privileges whilst employed as instructors. If it were financially possible it would obviously be a great advantage if this body of instructors could be formed into a separate sub-unit and an additional supply of equipment, vehicles, and training appliances issued for its use. With the possibility of the early introduction of some form of National Service as soon as mobilization is ordered, it is clear that there will be a great demand for such equipment for any training centres that may be formed. To withdraw such equipment from the slender resources at present possessed by units will cripple their training facilities at a critical period and further retard their readiness for war. It should, therefore, be maintained in peace and could be usefully employed in the manner suggested.

The organization put forward for a Territorial unit under modern conditions, therefore, envisages the unit being maintained in peace at war establishment in officers, N.C.Os, and specialists (including clerks for pay and " Q " duties) and with sufficient inducements held out to such specialists to ensure that they are maintained at full strength. The other ranks to be sufficiently strong in numbers to ensure a good flow of suitable candidates for training for higher duties and for efficient training to be carried out. This is the exact opposite to the present practice of maintaining a large number of Other Ranks and a small establishment of specialists. As an intimate part of the unit there should be, in addition to the above, a small sub-unit sufficient in personnel and material to form the nucleus of a training centre on mobilization. Such an organization would entail an increase in the peace establishment of units and perhaps some regrouping of drill halls and amalgamation of existing units. The cost, however, would not be great, and it would ensure that, as soon as they are embodied, units could move to their war or training station with all " key " men intact and should be ready to take the field with a minimum of further training. At the same time they would be able to leave behind in their central drill hall an organization ready to train recruits for their maintenance and to form the cadres necessary for future expansion.

Supervision of Training

From the argument that has already been developed it appears that those responsible for the training of the Territorial Army are faced with a double object—always a difficult problem.

(*a*) To train an unit ready to take the field with a minimum of further training after it has been completed to full strength by the addition of partially trained personnel and new equipment.

(*b*) To produce a body of trained instructors and specialists capable of forming the framework of a National Army.

It will obviously be easier to solve this double problem if units are divided, as has been suggested, into two parts, each part designed to fulfil one of the objects. It also follows that, when judging the efficiency of Territorial units, inspecting officers and those responsible for training should pay as much attention to the quality and quantity of trained instructors and specialists in the unit as to the unit's efficiency in the field. This is a point that is sometimes overlooked by Regular officers doing duty with Territorials. It is not always realized that the role of the Territorial Army on mobilization is completely different to that of the Regular Army whose ranks will be filled by trained men from the reserve. The Territorial Army will have to train its own reinforcements and its expansion role is equally important with the duty of providing a field army unit. Units must, therefore, be judged by a different standard to that used for the Regular Army and the close supervision of higher commanders and their staffs must not be confined to the period of annual camp. Frequent evening visits to unit drill halls are important because :—

(*a*) It is obviously the duty of Brigadiers and Staff Officers responsible for training to satisfy themselves that the organization for training and the standard of instruction is efficient.

(*b*) The standard reached by T.A. Instructors trained in the unit is best judged by visits to evening drills.

(*c*) Personnel of the unit are encouraged by feeling that a personal interest is being taken in their work. Such visits also add interest to their work by giving all ranks some event to work for.

(*d*) These visits enable those responsible for the direction of training to keep in touch with those local conditions and requirements which vary so much in individual units and play so important a part in their training.

Personnel

The two main factors that will affect our training policy are the material with which we have to work and the time available for training. As regards personnel it is clear that, to achieve either of our objects, the type of man enlisted must conform to a high standard ; quality is more important than quantity in the enlistment of recruits. At the present time an organized drive is being made for recruits and the natural tendency is to judge results by the numbers obtained. Consequently some officers commanding units tend to accept men of the wrong type because this will increase the unit's strength and earn for it a pat on the back from the higher authorities. If persisted in such a policy may be disastrous in a Territorial unit with its intimate local connections and social distinctions. In all Territorial units the social side is very important, and, if the wrong type of officers or men are accepted in any numbers, the local prestige of the unit will fall rapidly and the right type of man will not be persuaded to join up and serve with them. It is most important that no lowering of social or intelligence standards should be allowed, and that no pressure of any sort should be brought to bear on units to increase their numbers at the expense of quality.

It is always dangerous to generalize about the Territorial Army since everything depends on the local conditions of each individual unit. The type of officer and man will obviously vary considerably in the many widely differing areas, but in urban provincial units which form the bulk of the Territorial Army, the type of man enlisted is very similar to that enlisted into the Regular Army, and the general standard of intelligence is much the same. Although in some units there may be some who join the Territorials for what they can get out of it in the way of social advantages, free holidays in camp, or the cash bonus, their numbers are very few. By far the greater majority of officers and men join from a real sense of duty and give up much to make soldiering their one hobby and interest. They are, therefore, intensely keen and most anxious to learn as much as possible in the short time available. This spirit is a tremendous asset to their instructors who are always confronted with the problem of teaching a very great deal in a short time. Its effect is, however, to some extent counteracted by the fact that men come for their instruction in the evening when they are often tired or brain-weary after a long day in factory or office. They are, too, primarily civilians. Military atmosphere, methods, language, and customs are strange to them, and must be assimilated if they are to form part of one homogeneous British Army. Owing to pressure of civilian work, night shifts, domestic difficulties, or outside attractions, officers and men cannot be expected to turn up on every drill night. As a result, every

evening class of instruction nearly always contains one or more individuals who have not attended the previous parade. Continuous progressive instruction is therefore impossible without a certain amount of repetition and this slows up the rate of instruction of the whole class. When all these factors are taken into consideration it will be found that, in most units, the rate at which instruction can be given and absorbed is about the same as in the Regular Army and no faster. It is a mistake to try to cram too much into the limited time available.

Individual Training Period

In the Territorial Army there exists plenty of material from which instructors, N.C.Os and specialists can be produced. But, besides intelligence, a teacher or leader requires to possess initiative, power of command, and a knowledge of how to handle men, and these are qualities which are not always fostered in the routine work of a modern factory or office. However promising our material may be, individuals will require a good deal of practice and experience in handling squads before they can become efficient instructors or N.C.Os. This takes time, and the training of these men is best carried out during the Individual Training Period. The greatest difficulty that confronts a unit commander in drawing up his programme of training is the very short time available for teaching and practising the many varied subjects that his unit have to know. This is a common complaint in the Regular Army. But the difficulties are far greater in the Territorial Army since the time available is so much shorter. To carry out his obligations a Territorial soldier has to attend ten to twenty drills, according to his arm of the service, during the pre-camp period and has to be present at annual camp; attendance at a further thirty drills earn for him his maximum bounty. In practice many men do put in more drills than this, but there are always a proportion who, for various reasons, do not undergo more than the minimum training. If we take forty-five evening drills, each of one hour, and three or four attendances at a week-end camp as the average time spent on the pre-camp training of the normal Territorial soldier, we are not underestimating the time at our disposal. This is roughly equivalent to ten working days of six hours each and is a very short time in which to train the necessary instructors and specialists required.

The voluntary nature of these drills and the demands of civil life make it almost impossible for a battery or company commander to collect all the members of his unit together on any one night in order to carry out collective training. Both at evening drills and at week-end camps so many " key " men are likely to be absent that any attempt at

team work is likely to be a waste of valuable time. There is, therefore, neither the time nor the opportunity to carry out effective collective training during the pre-camp period. The holding of a limited number of parades of composite companies or batteries is useful in adding interest to the training and teaching men their duties in the field, but it does not afford opportunites for practising the team work implied in collective training and must not be regarded as taking the place of collective training. Most drill halls are situated in towns where facilities for field training are either non-existent or very limited in extent. The time available for an evening drill is seldom long enough to enable units to get out on the ground and, consequently, the greater part of the pre-camp training of the Territorial Army must take place in drill halls or on the barrack square. This is a factor which must be taken into account when considering the amount or type of training that can be carried out. The standard of knowledge that is reached by means of lectures, sand models, etc., is remarkably high, but both officers and men are apt to be " flumoxed " when confronted on the ground with problems which they would readily solve on the sand table. The period of annual camp should, therefore, be devoted to the greatest extent possible to practising *on the ground* the art of section, platoon and battery leading and battalion and artillery brigade manœuvre.

Annual Camp

The fortnight's annual camp probably provides the first occasion on which a battery or company commander has his complete command at his disposal for training. Since battery and company training form the basis of all training, it is most important that at least five clear working days of the camp period should be at the disposal of battery and company commanders for the training of their commands under the supervision of the Commanding Officer. Not one single hour of this time should be taken for demonstrations, tests, or any form of higher training. Of the remaining five working days available at least two are required by the Commanding Officer to carry out his own battalion or artillery brigade training under the supervision of the Brigadier. This leaves three days only for an exercise set by the Brigadier, tests, demonstrations, and any form of higher training that may be considered necessary. This training should logically come at the end of the camp period.

Territorial Regulations lay down that " In the limited time available for the training of the T.A. in peace, it is not to be expected that, as a whole, it can be trained up to the standard of the regular troops. The training should, therefore, be directed towards laying the foundation on which more extended training can be based." In these days of ever-

recurring national crises there is a natural tendency to ask too much of the Territorial Army. There is a limit to the number of evening drills and week-end camps that officers and men can be expected to attend under a voluntary system, and there is a danger of lowering the present fine spirit possessed by all ranks if it is unduly exploited. The number of subjects to be taught must be kept within reasonable bounds and instruction must be given slowly with plenty of time and practice for the lessons to be properly digested and absorbed. If at annual camp, for instance, one day is devoted to instruction in digging and wiring, one day to night operations, one to co-operation with other arms, etc., those taking part in the exercises gain only a smattering of each subject and the lessons are soon forgotten. Better results are obtained by concentrating training on the essential points of company and battalion training, these points being clearly defined by the Brigadier, and giving one subject of higher training for study during the year. If, for instance, night operations were selected, these would be studied during the pre-camp period and carried out at camp once during company training, once during battalion training, and would form the subject of a test exercise set by the Brigadier. The lessons thus repeated would be learnt and remembered.

Conclusion

It is therefore recommended :—

(*a*) That, except for a few exercises and sand model schemes for more senior officers, the pre-camp training period should be devoted to the individual training of instructors, specialists and other ranks in their duties within the unit.

(*b*) That sufficient instructors, N.C.Os and specialists should be trained and maintained in peace to meet immediate mobilization requirements.

(*c*) That the object of training at annual camp should be to carry out effective company and battalion training or its equivalent in other arms.

(*d*) That units should be so organized in peace that officers, N.C.Os and specialists required on mobilization for training recruits or the formation of fresh units could be provided without dislocating the organization or training of the unit itself.

If these principles were adopted they should ensure that the training centres necessary for the formation of a National Army could be provided within a few days of embodiment and that the time taken by Territorial units themselves to be ready to take the field could be reduced from a matter of months, to a period of four or five weeks.

TREND OF DEVELOPMENT IN AIRCRAFT
IMPRESSIONS OF THE PARIS EXHIBITION 1938

By A. C. CLINTON, A.F.R.Ae.S., R.A.F.O.

DURING the past two years the drive which has taken place in the aircraft industries of the leading countries has produced a range of aircraft, engines and accessory equipment, which shows that very large research and development programmes are in hand. The 16th Aeronautical Exhibition at Paris, last November, showed some evidence of the recent development. Military and civil aircraft and engines representative of Britain, France, Germany, Belgium, America, Poland, Czechoslovakia and Holland were shown. Russia and Italy did not exhibit, although there was a machine of Italian origin on the Belgian stand.

Practically all the exhibits were of the monoplane type, either low or mid wing, with power plants merging into the wing, or well cowled into the fuselage. Except for one or two reconnaissance and ground-attack types, all aircraft have retractile undercarriages which disappear behind smooth fairings in the wings.

The high speed of modern aircraft has raised problems in control for taking-off and landing, and all types are fitted with wing flaps and the majority with controllable pitch airscrews. It can be imagined that the pilot has an increasing number of things to supervise if not to handle directly when to the ordinary operation of the aeroplane are added the various military and navigational functions. The many auxiliary services have demanded independent study with the result that accessory equipment shows improvement in design and manufacture. There is appearing, rather belatedly, a realization that he must be further assisted by automatic devices, and in large craft by an engineer who will take a big share of the responsibility off him.

The following is a brief summary of the aircraft of military interest which are in use or under development, and most of which appeared at the Exhibition.

AIRCRAFT

France showed the largest number of aircraft, ranging from small training aeroplanes to bombers and flying-boats. Great Britain showed six aeroplanes; Poland five; Belgium two; Czechoslovakia two;

Netherlands two ; U.S.A. two ; and Germany one. Some designs which were new in 1936 have developed into production types during the last two years ; the original estimated performances in a few cases have not been fully realized, but generally the production aircraft are not far behind the estimated speeds.

The French scheme of nationalization divides the aircraft industry into six groups, which with a few exceptions include most of the familiar names.

The Morane Saulnier MS 406 single-seater fighter, of 1936 design, is now in series production for the French air force. With a Hispano-Suiza engine of 890 H.P. it has a top speed of 310 m.p.h. at 16,000 feet. A cannon-gun is arranged to fire through the airscrew, and two or three machine-guns are located in the wings.

Another single-seater fighter, the Loire 200, is fitted with a 890 h.p. Hispano-Suiza engine and is credited with a speed of 340 m.p.h. at 15,000 feet, cruising at 290 m.p.h. at 16,000 feet. The range of this aircraft is given as 580 miles, which is about the same as the Morane. It is not yet in production, but it is typical of the clean low-wing monoplane being developed by the leading countries, and in its latest form there is no doubt that the speed could be increased.

The British Hawker Hurricane with a Rolls-Royce engine of 800 h.p. and top speed of 336 m.p.h. is a better all-round product than the Morane and carries more armament. The Hawker Hurricane is outpaced, however, by the Supermarine " Spitfire," which with a Rolls-Royce engine of 800 h.p. has a speed not less than 355 m.p.h. These two British fighters appeared on the Air Ministry stand and the Hurricane also on the Hawker stand ; the standard set by these production type fighters is useful to bear in mind when noting the speeds of other types and guessing at the performance trend of future types.

The French Bloch 151 is a useful-looking low-wing single-seat fighter with a Gnome-Rhone air-cooled engine, giving speeds of 304 m.p.h. to 320 m.p.h. according to the engine power. An alternative engine is the American Pratt & Whitney Twin " Wasp." The armament is greater than the other French single-seaters as it can be equipped with four machine-guns, or two machine-guns and two shell or cannon-guns.

The construction of the foregoing aircraft has been studied with due thought for quantity production and this also applies to the design of the other aircraft of various types. Anything in the way of freak construction is not welcomed by production engineers who have to manufacture to a schedule.

Light type fighters were represented by the Caudron " Cyclone "

with a 500 h.p. Renault engine, inverted Vee type. It has a top speed of about 290–300 m.p.h. at 13,000 feet, and cannon-guns in each wing. With a high rate of climb, quick acceleration and good manœuvrability, this aircraft is similar to others of its class which are thought to be useful for certain kinds of interception duties.

Outstanding among the single-seat fighters was the novel Fokker D.23, which differed from the almost standard geometric layout of the other types. To give the pilot the best view he is placed in front of the leading edge of the wing, and is located between two 530 h.p. Walter " Sagitta " engines, one tractor in the nose of the fuselage and one pusher at the rear end. The tail plane unit is carried on booms and where these join the wing on each side of the fuselage guns are located, two other guns are fitted in the fuselage. A three wheel retractile undercarriage enables the aeroplane to be taxied in flying position and facilitates landing, hence making night-flying easier. The position of the pilot between the two engines and the location of armour underneath, at the sides, and above the engines gives a good measure of safety. When this aircraft undergoes tests, it is hoped to reach a top speed of about 330 m.p.h. and, while this is not as great as the fastest fighters, the qualities of vision, protection and armament have to be considered.

Holland also exhibited another single-seat fighter, the Koolhoven F.K. 58, which has created a certain amount of interest in France. Fitted with a Hispano-Suiza air-cooled radial (or as alternatives the Bristol " Mercury " or " Taurus " engines) the present top speed is 312 m.p.h. The armament consists of four machine guns. This design needs improving if it is to be a useful production type.

As in the 1936 Exhibition, so in 1938 Fokker and Koolhoven have again shown their latest types. Holland cannot absorb large numbers, and must look abroad for markets among the bigger countries which are fully occupied in expanding air armaments ; for the latter reason the bigger countries are not in a position to exhibit latest types.

An interesting single-seat fighter is the American pursuit type with a 1000 h.p. Allison engine (fitted with a turbo supercharger). This aircraft, the P.37, is built by the Curtiss Company, and, although no data is available, it should have a good performance at high altitudes, and a top speed of the order of 350 m.p.h. and a cruising speed of 325 m.p.h.

Poland showed a twin-engine two-seat fighter, the " Wolf," powered with P.Z.L. " Foka " air-cooled engines, which give a speed of about 290 m.p.h. This can be used for dive bombing when required and can carry a 660 lb. bomb.

Belgium showed the S.47 two-seater fighter which has an estimated

top speed of 300 m.p.h. at 14,000 feet with a 700 h.p. Hispano-Suiza engine.

A twin-engine fighter which comes in the 300 m.p.h. class is the Hanriot, with Gnome-Rhone engines, and good reports are given on its performance.

The American twin-engine fighter, the Bell " Airacuda," differs from the ordinary types in that the engines are pushers, and the nose of the engine nacelles contain cannon-guns. The fuselage has gun positions amidships, the gunner operating through blister-shape turrets on either side, but there is no field of fire immediately to the rear. This aircraft has two 1000 h.p. Allison engines and the top speed should be about 330 m.p.h.

The German single-seater fighters include the Messerschmitt and Heinkel types. The Messerschmitt Bf 109 has a top speed of about 330 m.p.h. ; it was an aeroplane of this design which gained the World's speed record of 379 m.p.h. The Heinkel has a top speed of 310 m.p.h. With regard to armament, it can be assumed that single-seat fighters have three or four machine-guns, and provision is frequently made for fitting a cannon-gun, in which case a machine-gun is usually removed.

The G.30 single-seat light type fighter produced by the Arsenal National, at Villacoublay, could only be seen from a distance and was a good looking prototype. It has an 850 h.p. Hispano Suiza engine, and a speed of about 320 m.p.h. Armament is stated to be two machine-guns and one cannon-gun, but this arrangement can be changed to suit operating conditions.

Two types of bombers which are in production were shown respectively by the Bristol Company and by the German Dornier Company. Both types are twin-engined and carry a crew of three. The Bristol Blenheim, with 920 h.p. " Mercury " engines has a top speed of 295 m.p.h. There is a machine-gun turret amidships and one machine-gun in the wing, and, following standard practice, the bombs are stowed inside the fuselage.

The Dornier has two 900 h.p. B.M.W. radial engines, giving a top speed of 290 m.p.h. Armament consists of a forward machine-gun and two rear firing machine-guns, one from a cupola on top of the fuselage and one below.

The German stand, although only showing the one aeroplane, included a variety of models, several types of engines, samples of light alloy development, airscrews, progress in aeronautical research and other air activities.

Poland showed the P.Z.L. " Elk," a twin-engined bomber with

925 h.p. " Pegasus " engines, giving a top speed of 273 m.p.h. This is said to carry a bomb-load of 5680 lbs. for a range of 800 miles, or 1360 miles for a load of 3880 lbs.

The French Loire 45, twin-engine bomber, carrying a crew of four, is fitted with 1100 h.p. Hispano Suiza air-cooled engines and has a top speed of 311 m.p.h. at 13,000 feet, and 280 m.p.h. cruising at 14,000 feet. The appearance of this mid-wing design is attractive and like nearly all types which have a rear-gun station has twin rudders (at the outer edges of the tail plane) so as to permit a clear field of fire immediately behind.

The Marcel Bloch 162 B.5. is a large bomber for long range work, carrying a crew of six, and powered with 1100 h.p. Hispano Suiza engines. Tests have yet to be made, but the estimated speed is 270 m.p.h. with 4000 lbs. bomb-load for 1500 miles range, or 8000 lbs. load for 930 miles range. Gun stations are amidships above and below. A later type Bloch light bomber, 174, is under development and has a top speed of over 300 m.p.h.

In production, the French have the Amiot 341 bomber of 1936 vintage, which has a cruising speed of 260 m.p.h. carrying 3300 lbs. bomb load for a range of 1240 miles, and, a more recent Amiot is type 350 developed from a special prototype which has broken records for speed and load carrying.

The German production bombers include the Dornier 17, already mentioned, the Heinkel 111, and Junkers Ju 86 and 89 types. The Heinkel is given a top speed of 300 m.p.h. and cruising speed of 265 m.p.h. with nearly a 1000 mile range with 2800 lbs. bomb load. The Junkers 86 has a top speed of 230 m.p.h., cruising at 190 m.p.h., with a range of 800 miles with 1800 lbs. bomb load. Range and speed may be modified, depending on the type of engines ; if Jumo Diesel engines are used the range will be greater. The Ju 89 with four 900 h.p. Daimler Benz engines is designed to carry 8000 lbs. for 1000 miles, cruising at 190 m.p.h.

There are two German dive bombers in use, the Heinkel and the Henschel. These aircraft have a top speed of nearly 300 m.p.h. and can carry just over 1000 lbs. bomb load for 900 miles, the range depending on the load required.

America showed the Vought V. 156 two-seat dive bomber, fitted with an 825 h.p. Pratt & Whitney " Wasp " Junior. This type is used in the U.S. Navy for dive bombing with a 500 lb. or 1000 lb. bomb. The top speed is about 270 m.p.h. with a cruising speed of 235 m.p.h.

The Poland general purpose " Sum," with 830 h.p. " Pegasus "

engine, has a top speed of 265 m.p.h. and carries a crew of three, while the French Hanriot 510 T.3., also with a crew of three, has two 700 h.p. Gnome-Rhone engines and a top speed of 218 m.p.h.

The French light bomber-fighter, the Potez 63, would be useful for reconnaissance, and has a top speed of 285 m.p.h. A crew of three is carried.

The German Dornier DO. 17 could be modified to make a useful twin-engine fighter and special reconnaissance aircraft if its present speed was increased.

The Heinkel and Henschel general-purpose types, which have been in production in Germany for some time, are now reported to have been improved in top speed, which is about 280 m.p.h., with a range of 1200 miles, cruising at 250 m.p.h.

On the Potez stand was the type 160, a two-seater experimental model of a large trans-Atlantic flying boat : a high-wing monoplane with six 40 h.p. train engines. This scale model has carried out a series of tests of considerable value in the evolution of the design of the full scale boat. ' This method of making a flying model before completing the full size craft was used by Short Bros. when building the Empire flying boats now used by Imperial Airways, and the " Sunderland " flying boats used by the R.A.F. The flying model was the Short " Scion Senior." Many problems concerned with surface areas, controls, tail location and centre of gravity position can be dealt with, so that when the full scale craft is ready the initial flight test is not so hazardous, and any modifications are relatively minor ones.

Aero Engines

A great variety of aero engines was shown. They varied in power from the 50 h.p. type for light aeroplanes to the 2000 to 3000 h.p. types for the latest military aircraft. The advance in power appeared evenly distributed between air and liquid cooled motors, and in both cases improvement in equipment and control was noticeable. Simplicity and standardization is still required, but progress has been made, the best example being that of the Bristol 2-row " Hercules " engine, a 1300 h.p. sleeve-valve motor shown as a complete power unit with controllable-pitch airscrew, exhaust ring, cowling, and an accessory drive gear box located on the aeroplane bulkhead and driven by a shaft from the rear of the engine. The power unit includes the bulkhead on which are grouped the various pipe lines, electric connections, engine controls and so on. The whole assembly can be bolted at four points to

the aeroplane and the necessary connections of fuel, oil and ignition systems made in a short time. The accessory drive gear box has six drives for serving the various electric, pneumatic and hydraulic systems required in the aeroplane.

Of the other Bristol sleeve-valve engines shown, the 2-row " Taurus," nearly six inches less in diameter than the " Hercules," and giving at least 1000 h.p. should prove useful for the twin-engine fighter class, and for Fleet Air Arm aircraft requiring small, compact engines. Although other engine firms are developing sleeve-valve engines, there were none on view.

The Hispano-Suiza type 82 is a 12-cylinder engine giving over 2000 h.p. and is equipped with two superchargers and twelve carburettors. The use of two-speed superchargers for increasing the operational altitude is general practice, and one engine was shown on the Hispano Suiza stand having three superchargers giving 920 h.p. at 32,000 feet.

The use of 100 Octane fuel has meant increased powers for take-off and altitude conditions, with the result that military engines have been suitably tested at the improved ratings.

The Rolls Royce " Merlin " supercharged engine has a top power of 1285 h.p. at 9000 feet.

The Napier 24-cylinder " Dagger VIII " engine giving 1000 h.p. at 8750 feet is a compact unit with small frontal area and has a low fuel consumption. A similar type of engine was used in the twin-engine " Mercury " seaplane (the upper part of the Mayo composite boat) which flew from Dundee to South Africa, a distance of 6045 miles.

On the German stand there was a good range of engines—Argus, B.M.W., Bramo, Daimler Benz, Hirth and Junkers. The Daimler Benz DB 600, of 1050 h.p., is used in the fighters and similar engines power some of the bombers. The Junkers 1000 h.p. engine is arranged for petrol injection, and similar types are available as Diesel engines. The Bramo " Fafnir " of 850 h.p. is a good example of an air-cooled radial which should be used in increasing numbers.

Both in liquid-cooled and air-cooled engines, there has been intensive research into cooling problems. The liquid-cooled engine uses ducted coolers that give the minimum resistance to drag, and a similar principle is applied to the air-cooled engine, so that the amount of cooling air required is carefully controlled for different running conditions.

General

The efforts to provide more speed, greater height and longer distance are more intensive than ever. Having achieved a design which is stream-

line and low in parasitic drag, the next improvement is to reduce skin friction to the minimum and this is being attempted by removing the boundary layer of dead air which lies close to the wing surface. An increase in cruising speed of between 10 and 30 per cent. is then possible. Aero engines seem able to compete with any demands of the aeroplane for speed and operation at great heights.

With increase in height the pressure cabin for the crew has become a definite problem, which has now been tackled. Although no details of military aircraft are available, there are two British civil air liners being developed with cabins which will be " supercharged " to give normal atmospheric conditions at great heights.

Increase in range can be achieved by reducing the structure weight of the aeroplane in order to carry more fuel, and most advance has been made by the geodetic system of construction used in the design of the Vickers " Wellesley " Bomber with " Pegasus " engine, which gained the World's distance record of 7162 miles.

The detail equipment necessary for the engine, and the services in the aeroplane, has improved in construction and design, but there is one item, that of de-icing, concerning which little progress seems to have been made in spite of the urgency.

Discussions on armament reveal diverse opinions on the effectiveness of machine-guns and cannon or shell-firing guns. Machine-guns of .5 in. and cannon-guns of 23 mm. are considered to be the most useful sizes at present. Some aircraft mount only machine-guns, others include a cannon-gun as well; the alternative mountings in any case allow for change of guns as experience may dictate. Accurate shooting demands a good gun-platform, which is not always easy to obtain in a high-speed aeroplane.

A short time ago, multi-seat aircraft bristling with guns were favoured by some schools of thought. The tendency now appears to be to retain the guns and reduce the number of gunners. The guns are placed to cover definite sectors and can be controlled from a central position. This arrangement means that more importance is given to axial than to broadside fire which is not very accurate at high speeds; improved accuracy could be obtained by increasing muzzle velocity, but this incurs increase in weight of gun mountings and taking undesired recoil shock across the fuselage structure.

At a distance it is difficult to identify individual types of aircraft owing to similarity in layout, and in flight recognition is not made easier by high speeds.

The speeds of all types show a steady increase and it may be assumed that the fighter class will reach 420 m.p.h. and the fast bombers 370 m.p.h. The next two years should see a variety of types for fighting, interception, special reconnaissance, and bombing; whether or not air forces will standardize their air arm to a few types is still debatable, since specifications of the aircraft required for battle operations are not drawn up in the factory.

The well-being of the crew of modern aircraft still needs attention. While heating and oxygen equipment has improved, it is difficult to reduce noise which greatly impairs fighting efficiency.

EUROPEAN BACKGROUND

By Sir Arthur Willert, K.B.E.

On Wednesday, November 30th, 1938.

Air Vice-Marshal Sir Philip Game, G.C.V.O., G.B.E., K.C.B., K.C.M.G., D.S.O., in the Chair.

The Chairman on introducing the Lecturer said: "Sir Arthur has been a shining star in so many different constellations that I think he must be familiar to us all in one way or another. He is going to tell us something about the "European Background." Speaking for myself, I think that that background is rather like a Dutch old master—very dark and very obscure—and I am quite certain that any light he can throw on it and anything which enables us to reckon more accurately our own place in the picture will be of very great help."

LECTURE

I THINK that there is only one way to approach the European problem, and that is in the same terms as it is approached by those who are in one way or another responsible for it, that is to say, in terms of potential warfare. If there is one thing clear in this nebulous world, it is that schemes for getting things organized on the basis of permanent peace—the League of Nations, International Conferences and so forth—are for the present in abeyance. We are back to where we were before 1914, playing, in diplomatic jargon, "power-politics." If I may go further afield than Europe and look at the world as a whole, there are three main theatres of international affairs. Only one of them is in a decent state of international order, and that is the Western hemisphere. The reason is simple: only there is organized force functioning on the right side and in the right way. What is keeping peace and decency alive across the Atlantic is, in the last event, the overwhelming power of the United States, and that power is exercised on the right side.

In the other two diplomatic theatres, the initiative has gone to the people who use organized force on the wrong side and are engaging in the game of "power-politics." That game can really be very simply described: it consists either in taking what you want or in doing what you want and then turning round to the rest of the world and saying, "If you don't like what I have done; if you don't like what I have taken, come and stop me, come and turn me out." Or else, as we saw in the

case of Czechoslovakia, war is threatened unless something is given to the threatener. Those are the gestures of " power-politics." If one goes back over the last eight years, one sees that the headlines of international history present a series of " power-politics " coups. First of all, there was the slicing off of Manchuria from China by Japan and the converting of that province into the vassal State of Manchukuo. Japan said to the League of Nations and ourselves, " If you feel so strongly about our violating the integrity of China, come and turn us out." We did nothing except lecture and protest.

After the Far Eastern question, there came a long, chaotic period of politics centering in the Disarmament Conference. Almost directly after that Conference, Hitler took up the running, and one Saturday morning in March, 1935, he tore up a very important part of the Treaty of Versailles and announced that he intended to have all the Army, Navy and Air Forces that he wanted. There, again, we and the League of Nations confined ourselves to protests. Then came Abyssinia: Mussolini dared us to impose effective sanctions, and got away with it—another very successful example of " power-politics." While the Abyssinian War was still going on, there occurred what was, I think, really the most fateful " power-politics " coup of all, when on 7th March, 1936, Hitler marched his men back into the demilitarized zone on the West Frontier of Germany, and successfully dared us and the French to turn him out.

Personally, I am inclined to date our present troubles from that moment. When we allowed the Germans to occupy the demilitarized zone, we made the Czechoslovakian problem almost inevitable, because directly we allowed the Germans to build up their fortifications along the Rhine we gave the Rome-Berlin Axis its military significance; we made it an effective answer to the French policy of encircling Germany with alliances. From that moment, the whole basis of European security was bound to be upset. Many people used to regard the Locarno Agreement of 1925, together with the League of Nations, as the basis of European security. I am rather inclined to wonder whether the historian of the future will not consider that view to be a fallacy; whether that false dawn of appeasement which we had from 1925 until 1932 or 1933, was not really due to the fact that the balance of power in Europe during those years was with the peace-loving nations—France, Poland and the countries of the Little Entente, who were satisfied with Europe as it was. It is true that there was no actual alliance between France and the two Southern countries of the Little Entente but, roughly speaking, Germany, then still weak, was surrounded by a group of countries strong enough to crush her had she tried to do what she has

since done. Directly the Germans started on their policy of 7th March, 1936, and began to reinforce their rearmament and their growing intimacy with Italy by means of the Siegfried Line, what has happened became inevitable. The Spanish War has so far been another example of successful " power-politics." We have had the Dictators flouting the Non-Intervention Committee and the Western Democracies by helping General Franco just as much as they have wanted to, except when, as a result of the Nyon Agreement, we succeeded, by threatening to use force against force, to stop submarine piracy in the Mediterranean. After that threat we heard no more of the " piracy " by General Franco and his friends' submarines, and that particular danger was removed to the air, where it remains. After Spain, although the Spanish trouble is not yet over, there came the great " power-politics " strokes of Austria and Czechoslovakia.

I am afraid that in fact there is no doubt we must now accept the universal European interpretation of Munich as another very heavy defeat for the Western Democracies and as another example of the efficacy of " power-politics " when carried on against people who are not ready to fight.

Now a very important point about these " power-politics " coups is that they started independently and then got linked together. The Japanese were acting entirely on their own in 1932. Hitler was acting on his own when he started to re-arm in 1935, and Mussolini was acting independently when he went into Abyssinia. But after Abyssinia things began to change. A *rapprochement* took place between Italy and Germany during the Abyssinian period and the Germans took Italy to their bosom. Next they got into touch with the Japanese. Then they brought Italy into the anti-Commintern Pact, so that now we are confronted by a new Triple Alliance of the two Central European Powers and their Japanese friends.

Thus Europe is the scene of a concerted diplomatic, political and strategic attack by the dynamic, aggressive countries upon countries who want peace and are not particularly interested in getting the world changed. And that attack is very definitely led by Germany. Germany is infinitely stronger than Italy to-day. The tables between Hitler and Mussolini have been completely turned in recent years. In 1934, when Mussolini first saw Hitler in Venice, the meeting was a complete frost. Mussolini virtually said when he left Hitler : " That fellow is no good ; he talks too much." In fact, at that time, he hardly considered that Hitler was worth his membership card in the dictatorial trade union. Now, on the other hand, Hitler is practically the permanent President of that Union, and Mussolini has been relegated to a back seat.

The most notable example of Italian subserviency to Germany seems to me to be the present Italian persecution of the Jews. A few years ago no people seemed less likely to persecute the Jews than the Italians. Mussolini had often inveighed against racial prejudice. He did so, for instance, in an interview with the German-Jewish writer, Emil Ludwig, in 1932. Italy has had at least two Jewish Prime Ministers and there was a famous Jewish Mayor of Rome, named Nathan. But now she is likely to continue in the wake of Germany until we and the French are far stronger in every way than we have been recently. That is the next point—this dominating activity of Germany, not only in Europe but right across the world. I do not indeed think it is fantastic to look upon the European situation as part of a vast political, strategic offensive against us, the French, the Americans and the Russians, the whole line of which stretches from China to Spain. We have the Japanese contributing to it by what they are doing in China. We have the Germans exploiting the nationalistic urge of the Japanese to get what control they can of China.

In the centre there is the massive effort that Germany is making to control all Central Europe. For the moment this seems to be taking the form of hoisting us, the Western Democracies, by that petard of our own which we employed so usefully in the late war—the petard of nationality. We used the claims of nationality to break up the old Austrian Empire, and now the Germans are paying us back in our own coin. They have used Pan-Germanism to grab Austria and smash Czechoslovakia. They may use it again to slice something off Jugo-Slavia. But in the meanwhile they are beginning to pose as the protectors of nationalities just as we did at the end of the War, when we created the Succession States. Hence their determination to prevent Hungary from getting the Ukraine. They are stirring up the Ukrainians in Poland and Russia. In all, there are about forty million Ukrainians in those two countries (mainly in Russia) and Germany may be suspected of trying to form a vassal Ukrainian State which would take her pretty well down to the Black Sea. There you have the main reason why Poland and Russia are now trying to get together. Another reason is the fact that the Rome-Berlin Axis is shutting off Eastern Europe from the French and ourselves, and the fear that we and the French will, therefore, let Eastern Europe stew in its own juice so that its countries must manage their own destinies.

Why are the Germans so aggressive? The immediate reason is, I think, clear. It is one with which we can have sympathy. It is fear of encirclement and desire for elbow room. This is not entirely the product of the Treaty of Versailles. That the French and Russians desire to

encircle Germany is an old obsession with the German mind. Every German is convinced that the War in 1914 was due to the way that the French and Russians were trying to encircle the German Empire. The average German will tell you that what actually started the War was the Russian mobilization. In recent years—since the French and Russians came together in 1934, the Russo-French peril has again been persistently preached in Germany. The picture of France and Russia working to keep Germany down, with us sympathetically in the background, is constantly before German eyes. Russia especially is regarded as the peril. Hence German friendship with Japan in order to cramp Russia, so that she will be less able to interfere against Germany in Europe. It is also meant to cramp us. We were greatly helped in 1914 by our Alliance with Japan: she looked after our interests in the Far East. This strengthened us in Europe. Now, on the other hand, Japan would not be with us, and might be against us, if war came. That would weaken us in Europe. There, surely, you have the reason for the Far Eastern *liaison* that Germany has made with Japan—this effort to cramp us and the Russians in Europe. I may be prejudiced, but for the same reason I have never been able to see the sense of the ideaological theory regarding the Spanish War—the idea that Franco ought to be supported because he is dealing with the "Red peril." I have always looked upon that theory as the product, to a very large extent, of German propaganda disguised to depict Germany as a sort of bulwark between Western civilization and Bolshevism; whereas in reality Germany and Italy have been, and are active in Spain, not to keep Spain from going "Red," but to make her a member of the German-Italian-Japanese *Triplice*. With Spain on the side of the totalitarian countries, they would, in the case of war, be in a good position to cut what Mr. Eden called not long ago our vital Imperial communications through the Mediterranean; to separate the French from the sources of material and man-power in their African Empire, and give them three frontiers to defend instead of only two. I believe that even during the crisis, in September, the French were using the Atlantic more than the Mediterranean for communications with Africa. One knows also that the Germans are digging themselves in, in what are called cultural and trade ways. They are getting primary products from Spain—from the iron ore of the Basque territory down to oranges and lemons.

But I have said enough to stress the way the pattern of world affairs seems to be dominated by this great stratego-diplomatic offensive against us—stretching from China in the East to Spain in the West. This offensive, to my mind, is disguised not as a preliminary to a planned and inevitable war, but to give Germany the cards she wants in the game of "power-politics" she is playing.

What is Germany really after? Obviously her first objective is the domination of Central and South-Eastern Europe. As to what she may be expected to do after that you have two schools of thought. The first school believes that we can afford to let Germany dominate Central and South-Eastern Europe, and that after all it is only fair that it should be so. All other great Empires, the argument goes, have their spheres of influence, and it is neither fair nor expedient to keep Germany cooped up within her frontiers without spheres of influence or colonies. Let Germany work her will in further Europe and she will settle down. People who think in that way may be called the "Satiety School." The other school is the "Springboard School." It argues that the Germans are digging themselves in in Central Europe and Spain in order to be in a position to challenge our Empire later on by driving Eastward towards Mesopotamia, Egypt, the Suez Canal and perhaps beyond; to reach out, in fact, for the "world domination" which was the dream of the Pan-Germans in the days of the Empire. The whole problem of Europe revolves round the question as to which of these two—the "Satiety School" or the "Springboard School"—is right. I do not want to sail under false colours, so I will admit that I belong to the latter. Those of you who follow the German Press will have noticed how, since Munich, Persia and Mesopotamia, Baghdad Arabia have reappeared in it. Another thing which makes one nervous is German history. Looking back over the last hundred and fifty or two hundred years, you will find that Germans have always been aggressive, explosive, and acquisitive, and not particularly scrupulous about the means employed. That state of mind seems to have started with the beginning of the Prussianization of Germany, that is to say, roughly, with Frederick the Great. How Hitler would have gloated over that Monarch's first move against Maria Theresa—the slicing off of Silesia without any warning whatever! How Goebels and others would have rejoiced in the treatment of Poland when it was partitioned later on! The pet philosopher of XVIII Century Prussianism was Herder, with his talk about the destiny of the German race. What he said is essentially what is being said now. After Frederick the Great came the Napoleonic period. Some of you will have read Fichte's famous *Speeches to the German Nation;* they also foreshadow the expansionism of these days. In the Chatham House publication, "International Affairs," Mr. Wickham Steed gave recently a vivid picture of the historical development of Pan-Germanism. He traces it from Frederick the Great, through Fichte, down to Houston Stewart Chamberlain—the author of *The Foundations of the XIXth Century* and a renegade Englishman who much influenced Pan-Germanism before the War. And now all this accumulation of racial mysticism and aggressiveness is concentrated in the Nazi move-

ment. Hence in the Germany of to-day there exists an extraordinarily dangerous mixture of the superiority complex and the inferiority complex. The superiority complex is what I have just tried to describe—the manifest destiny of the German race and so on; a doctrine with which the youth of Germany is being continuously inculcated. The inferiority complex is the discontent left by the Treaty of Versailles, the demand for colonies, economic elbow-room, raw materials, and so on.

Another thing that puts me in the "Springboard School" is the opinion of Germany's neighbours, especially the Swiss—the German-Swiss in particular. The German-Swiss are German in race, in culture, thought, education and literature. They were naturally pro-German during the War. I remember meeting at Geneva a well-known writer from Zurich, not long after Hitler had come into power. I asked him what he thought of the Nazi movement. He threw up his hands and exclaimed, "It is a tragedy." He went on to explain that the Swiss felt completely cut off from what had been their spiritual home. "It is," he said, "as if a curtain of misunderstanding and darkness had come down between us and Germany. Occasionally, a corner of the curtain is raised and we see our friends with changed faces gibbering obscure obscenities at us." He went on, I remember, to speculate how long it would be before further expansiveness became active and dangerous to Germany's neighbours.

Such are some of the reasons which make one feel very much in agreement with the school of thought which says that Germany will not be satisfied with the control of Central Europe and why I feel that Spain is so important to us. What then, ought we to do? I am not one of those who takes a pleasure in indiscriminate abuse of our Prime Minister for not having done this or that, or for doing this or that. I do not see what else he could have done at Munich, given the circumstances with which he was confronted in September. As for what he is trying to do now in Europe, I admit that I am not happy. Nor am I happy about much that the Government is doing (or not doing) at home to prepare us for the contingency of war. But I think it unfair to dismiss the Prime Minister's policy as being simply one of rather problematical appeasement. There seems to be another side to it. He appears, like the Americans, to be banking also upon the economic factor. I was in Washington two years ago when the project for the Anglo-American Trade Treaty first came up. The American Government were anxious for it for other than purely economic reasons. They thought that if the democratic countries in general and the British Empire and the United States in particular could trade more freely together, they would certainly be much more prosperous, and the totalitarian countries might

perhaps see the danger of economic nationalism. One American leader put it to me as follows : " If they see that our despised economic system is working, while they are getting into difficulties themselves, they may wish to come back into normal international trade. And then we shall have them where we want them. They cannot get back into international trade without foreign credits, and the only places in which they can get foreign credits are New York and London. Thus we may be able to make our conditions, which would be that they should come back into a Disarmament Conference, with an Economic Conference to follow, at which the world would try to reduce trade barriers and so on still further."

It is now no indiscretion to say that at the Imperial Conference here eighteen months ago, Mr. Chamberlain—then still Chancellor of the Exchequer—made a strong plea for the Anglo-American Trade Agreement on the grounds that, even if it did conflict to some small extent with Imperial preferences, the advantages that it might bring to world conditions would more than outweigh the loss to Imperial preference.

The fact that the Anglo-American Trade Agreement is now an accomplished fact may, then, have useful reactions upon the European situation. By as much as it strengthens our economic position, it should also strengthen our position in Europe. What I mean is that, if I read aright the Prime Minister's policy, the olive-branch of appeasement is meant to be held in the mailed fist of armaments. We have accepted Germany's challenge to a race in armaments. We have accepted it feeling that a race in armaments is also a race in economic endurance. If we can organize them, our resources in this race are obviously greater than those of Germany. The question is can we organize them, or was Lord Baldwin right when he said that Democracy must always be two years behind Dictatorship. I was talking the other day with a great French authority on foreign affairs, and he remarked that the danger with us was the defects of our virtues. " Your greatest virtue," he said, " is the calm efficiency with which you face a really big crisis. You come through smiling with your nerves in excellent condition. The defect of that virtue is that you get your good nerves from the fact that you sleep soundly from the end of one crisis to the beginning of the next." My friend added that what worried him now was the signs that since Munich we were again becoming somnolent.

There, it seems to me, lies the key to the whole business. If we are to be safe and keep the world safe from the " power-politic " offensive and the dynamics of discontented nations, we must so organize our strength as to make them realize that it will not be they who in the

end will profit from a continuance of the race in armaments and of their recent tactics of bluff, smash and grab.

DISCUSSION.

MAJOR N. MACROBERTS: The Lecturer omitted one very important point; I refer to the Anglo-German Naval Agreement. Germany, we are told, could challenge us on the seas. Let us recall what occurred in 1914. The only reason that we came in against Germany was because our fleet was challenged. It was not a question of Serbia or Austria.

THE LECTURER: I dismissed the Anglo-German Naval Agreement from my mind after a conversation I had with an eminent member of the Nazi Party. Soon after the conclusion of that agreement I asked him what it meant from the German point of view. He said, "It means that we could not possibly re-arm in all three dimensions, so to speak, of land, sea and air. The sea is of no particular importance to us. We could never build up a fleet which could challenge you over the Colonies or anything of that sort. Therefore, we prefer to concentrate on the land and the air—on the air because we believe that the Air Force may be almost decisive in the next war. It is quite possible that the use of the air might finish off a war quickly—a thing we were unable to do in the late war." Another reason why I did not speak of the Agreement is that I have never forgotten the remark of that respectable statesman, Herr von Bethmann Hollweg, about the "scrap of paper" in 1914. I do not know whether it is right to be too sanctimonious about the observance of treaties on our part, but there is nothing in Prussian history which shows that Prussian Germanism has ever worried about treaties this way or that if they stood in its way.

I would, perhaps, rather question whether it was fundamentally naval rivalry that brought us into the late war? Was it not more the commercial rivalry behind the naval rivalry that made Germany challenge us and made us accept the challenge?

VICE-ADMIRAL G. O. STEPHENSON: Could the Lecturer give us a little more light on Italy's view of her present situation *vis-a-vis* Germany? The main plank in her former foreign policy was that she should not have another first-class power on her frontier, and it was the threat of that that caused her to mobilize and send an Army Corps there. It seems to me that she is now in a very difficult and awkward position: she is dominated by a country which has no thought for anybody but itself, and if only she could see a way out of the difficulty without losing face, her interests lie more with ourselves than with Germany.

What hope have we of Italy turning round on the present axis to the democratic countries rather than to Hitler, and what effect may the forthcoming visit of the Prime Minister to Rome have on that?

THE LECTURER: I wonder whether it is not the case that the policy of Italy turns on Spain, and that one of the reasons why the Germans are so interested in Spain is that by controlling Spain they can keep the Italians in line. If they can hold Spain, they can shut us out of the Mediterranean and destroy our potential power over Italy. That is why I attached such enormous importance to Spain. The clearing up of the Spanish trouble may be the key to the future of Europe. If Franco fails, the Mediterranean should remain open, and Italy may show her true colours, which ought to be anti-German and probably pro-British.

ADMIRAL SIR WILLIAM GOODENOUGH: Has not the Lecturer been talking about the foreground rather than the background of Europe? To show the background, it

is necessary to go far deeper than what governs human progress in this rather hopeless prospect that he has put before us—" power-politics," as he expresses it. What I mean is that you have referred to what is going on now in the foreground but not to what happened in the background of what we may hope for our children.

THE LECTURER: As regards that, I would stress what I said about the consecutiveness of German expansion over the last two hundred years. I really believe that that is the background of Europe now, together with the fact that circumstances have in one way or another facilitated its development.

In an extremely interesting address recently at Chatham House, the view was expressed that what was happening was really a return to the old Paganism—the worship of the State; hence the Nazi challenge to Christianity. I would repeat that, to my mind, the essential background of Europe to-day is the challenge of the Prussian desire for world domination, the Prussian repression of individual liberty and free speech, the Prussian contempt for what Signor Mussolini has called the pluto-democracies, and the Prussian conviction that the democracies are on the run.

VICE-ADMIRAL STEPHENSON: Can the Lecturer tell us what is, in his opinion, the effect of the anti-Christian movement in Germany now, and whether that is likely to have any disintegrating effect on the unity of the national spirit?

THE LECTURER: You know the French proverb, " He who bites the Pope dies." There is a great deal in that, and one does feel very strongly that in the end Hitler is going to suffer tremendously by his challenge to the Churches. In regard to the Protestant Church, there was a few years ago the feeling that it was not pulling its weight, but latterly its influence has been enormously increased by persecution. The Jewish question is also going to cause him trouble in Germany as well as outside. Christianity is more and more making common cause with the Jews against him. It is hard to say what is going to happen. Were Hitler to disappear tomorrow, the Jewish difficulty would probably settle down, but in relation to the world in general, German ideaology would probably remain much what it is. In the meantime, is there any chance of Germany disintegrating? I do not see it for the moment. Hitler is, I think, still very strong, not only with his own party, but with Germans in general. Many Germans, most probably, dislike the religious persecutions and especially the martyrdom of the Jews; but this does not mean that they are against Hitler, who after all has done an immense deal for his country.

LIEUTENANT D. S. WEDDERBURN: At the first meeting between Herr Hitler and the Prime Minister, Hitler said that if we were prepared to agree to the principle of Sudeten Germany being handed over to the Reich, he would be prepared to negotiate the details. Why did his attitude change?

THE LECTURER: The only explanation I can give is that when Mr. Chamberlain first went out Hitler was impressed by the possibility of a very strong policy on our part, but that between then and Munich he decided that after all we were not going to fight.

CAPTAIN G. S. F. MIDDLETON: A few years after the War there seemed to be a prospect of Russia and Germany becoming more closely allied. Is there not a considerable body of opinion in the Reichstag which desires that, and might that not be even more formidable than appears on the surface?

THE LECTURER: That possibility has always been a nightmare to the French. Undoubtedly, there was in the German High Command a strong feeling that steps should be taken to that end. As for the Russians, the story runs that before deciding to approach the Poles the other day, Moscow considered the possibility of coming to some understanding with the Germans, but decided against it.

CAPTAIN A. R. FARQUHAR, R.N.: The Lecturer has stressed the importance of Spain with regard to the effect upon Italy. Supposing things did go rather badly, have we not a very strong card against Italy in Abyssinia?

THE LECTURER: Is it not possible that the Italians would be prepared to pay the price of being isolated from Abyssinia if, on the other hand, they could command the Mediterranean? That command might give them countries which could be used to buy Abyssinia back at the end of the war?

CAPTAIN E. ALTHAM, R.N.: The Lecturer alluded to our position in the picture of which he was painting the background; that position, as I see it, is that we have emerged from the stage when we thought that collective security was a cheap form of national defence, and are gradually getting back to trusting to our own strong arm.

He also implied that in the opinion of some of our potential enemies we were suffering from an "inferiority complex." In the case of a minority—I believe it is a very small minority—of people in this country, I think that is true, but I do not think it is true of the large majority—I hope not. What we need now is to regain that place in the international picture, which was expressed by the great poet who wrote:—

> "We sail'd wherever ships could sail;
> We founded many a mighty state:
> Pray God our greatness may not fail
> Thro' craven fears of being great."[1]

THE CHAIRMAN:

The duty of an efficient Chairman is to sum up the discussion. You will all agree that Sir Arthur has disclosed such a very wide grasp of the whole subject and such detailed knowledge of the state, not only of Europe, but of the world at the present day, that it would be a very bold and foolish Chairman who tried to butt in.

There are only two matters I would just like to touch upon—two impressions that I take away. One is that at bottom, when you get through all the smoke screens of nationalities and so on, the struggle is an economic one.

The second impression is that, if we are going to consider the matter from the strategic point of view, we have to remember that we cannot solve it as we could have solved it in 1914. Bacon said: "He that commands the sea . . . . . may take as much and as little of the war as he will." That was the position in 1914. It is not so in 1938 since aeroplanes have come along, and if we do not remember that we shall get on to the wrong road. I would like to express our very great thanks to the Lecturer for giving us such an interesting Lecture.

The customary votes of thanks to the Lecturer and Chairman were carried by acclamation.

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[1] From "Hands all Round," by Tennyson.

THE INTERNATIONAL SITUATION

THE EUROPEAN FOREGROUND

SINCE the events chronicled in last quarter's JOURNAL the world has been taking stock of the agreement come to in regard to Czechoslovakia, and it is seen to have had many and varied repercussions which now fill the immediate foreground of international relations.

GREAT BRITAIN

There are a number of people in our own country who still regard the outcome of that fateful meeting at Munich as a triumph for dictators and a humiliation for democracy. Many seem to ignore, or not to have taken the trouble to ascertain, the simple facts. The essentials of these were presented in these Notes of last November; but may be briefly summarized in order to get the rest of the perspective right.

Nearly twenty years ago, in an atmosphere of vindictiveness which was the natural aftermath of a great war, the victorious allies created a country with purely arbitrary boundaries which often cut deeply into the territories of nationals who had been defeated. During those years the Czechs had sought to consolidate their position and in order to do so had resorted to very repressive measures against peoples who were within the sphere which had been marked out as Czechoslovakia but who were not of their race. These peoples had made frequent appeals to the League of Nations, but with no avail. The League was still concerned in upholding the Treaty of Versailles, and it has been largely this stubborn attitude which has proved its own undoing.

The time came, however, when Herr Hitler felt strong enough to demand that these territories should be reunited with the neighbouring countries where dwelt people of the same race. The fact that Germany had already occupied Austria, from which a large slice had been carved to make Czechoslovakia, greatly strengthened his position; but it cannot be said to have affected the logic of his claim: that was really incontestable. Unfortunately he had a rush of power to the head, and thought that he could repeat in Czechoslovakia what he had achieved in Austria without opposition: he had only to "march" in order to overrun the country and make a still greater Germany. When he at last realized that he would be faced with armed intervention by France

CZECHOSLOVAKIA'S NEW FR

(Maps reproduced from the Bulletin of International News *by courtesy*

(NOTE. *These maps should be compared with those facing p.* 83

NEW FRONTIERS.

by courtesy of the Royal Institute of International Affairs)

facing p. 836 *of the* JOURNAL *for November,* 1938.)

backed by Britain, he gave way and reverted to his original not unreasonable claims, which were acceded to by the Powers concerned.

It would have been indeed a queer interpretation of democracy that it should have marshalled its forces to keep peoples under irksome and alien rule to which they had been handed as a punishment for being on the wrong side in the late war.

The persuasive personality of the British Prime Minister, helped by the French Premier and the Italian Dictator, restored the Fuehrer's brain pressure to normal—and another great war was avoided. Wherein lies our humiliation ?

Nevertheless, the imminent danger of war awoke our slumbering countrymen—and women—as nothing else has been able to do since they took to imbibing large draughts of those narcotics labelled " League of Nations," " Collective Security," and " Disarmament." They clamoured for protection from the bombing aeroplane as they had never clamoured for the means of protecting their breakfasts and dinners ; but when they put their pennies in the slot and anti-aircraft guns, balloon barrages and air-raid shelters failed to come tumbling out, innumerable heads were demanded on chargers.

It is the unfortunate defect which accompanies all the blessings of democracy that elected governments do not seem to be able or willing to educate the electorate and to save the nation from mass ignorance and mass neglect to support, in sufficient time, measures for self-preservation.

However, the Service authorities, having been starved for years, are now doing their best to supply the needs of their respective charges, while the civil departments, without military discipline to help them, are tackling unfamiliar problems of training and organization. Meanwhile, the Prime Minister strives to promote appeasement between peoples whose worst natures are being continually aroused by the " snapping and snarling " of a commercialized press and self-advertising politicians.

GERMANY

From time to time the murmur of " Colonies, Colonies," is reiterated in Germany, and Herr Hitler has intimated that they are still an awkward subject which will have to be mentioned sooner or later. The claims advanced for the return of those overseas territories which she occupied before the War are for the most part quite specious, and they entirely ignore the fact that she lost her Colonies in fair fight. When nations resort to hostilities to settle differences they must realize that the side that loses will inevitably be a lot worse off than before. Germany lost that war, and with it her Colonies ; conversely—as her

present generation is being brought up to false beliefs in this simple matter of history—the fact that she no longer has her Colonies should afford convincing proof that she did lose the war. She should, therefore, approach the whole subject as a humble supplicant, not as an indignant litigant.

On our side, we should face the fact that Herr Hitler may feel compelled to demand the return of the ex-German lands at the point of the pistol, or rather the bomb; for the worst of being a dictator is that he is like a magician standing in a perpetual spot-light, who has to be continually producing new surprises out of a hat lest he should lose the attention of his audience and they should start wondering why they go on sitting in the dark. So far Hitler's surprises have come out very well; but one day he may break a lot of eggs and fail to produce the omelette. Therein lies the danger to peace.

It would be a pity if we had to fill the role of the man who spoilt the best trick; but it has never been our custom to give away territory which has passed into our keeping as a result of great sacrifices and where the inhabitants wish to remain under British protection. The situation as regards the ex-German colonies bears no resemblance to that of the Sudeten lands, for their peoples show no desire to return to a master who has so recently made such a display of intolerance towards other races and creeds.

Germany's latest move to increase greatly the number of her submarines makes it all the more necessary to retain under our control harbours and ports which might otherwise become bases for those underwater craft, and a threat to our sea communications.

FRANCE AND ITALY

On 30th November last, Count Ciano was addressing the Chamber of Deputies on Italy's foreign policy, when there was a 'spontaneous' demonstration and shouts of "Tunis," "Corsica," and "Nice." The French Foreign Minister immediately called on the Italian Ambassador in Paris, and later the French Ambassador in Rome called on the Italian Foreign Minister, to lodge strong protests. The Italian Government naturally disclaimed responsibility for an outburst of a "spontaneous character." Even the British Ambassador went to inquire what was the meaning of all the noise, and was informed that it "did not represent the Italian Government's opinion."

Nevertheless, the semi-officially controlled Fascist press started a strong anti-French crusade, emphasizing Italian grievances in regard to her nationals in Tunis, the Suez Canal dues, and the French owned railway from Jibuti to Addis Ababa. This attack, needless to say,

received spirited rejoinders in the French press. On the Italian side the Rome-Berlin axis was brandished menacingly.

On 22nd December, the French Foreign Office announced that Italy had declared the Agreement come to between the two countries in 1935 regarding Tunis to be null and void, the thin excuse being advanced that " ratification " had never been exchanged. This Agreement was supposed to have settled all outstanding differences between the two countries, especially as regards the future of Italian nationals in Tunis ; in exchange for the surrender of claims there, France had agreed to certain rectifications of the frontiers of Libya and French Somaliland. The Italian Government has now asked for new proposals, but they have not suggested foregoing the territorial advantages which they have acquired.

The immediate result of all this has been visits by M. Daladier to Corsica and Tunis, which have been made the occasion for fervid demonstrations of loyalty to France in those countries. Efforts by Italy to induce the British Government to intervene in the dispute have been met by a somewhat frigid intimation of neutrality.

The visit of the British Prime Minister and Foreign Secretary to Rome during the second week in January was marked by a display of popular enthusiasm which seems even to have surprised the authorities, who certainly desired that they should receive a warm welcome. There is no doubt whatever that it is Britain, far more than Germany, whose friendship the Italian people wish to cultivate.

SPAIN

Whether our severely impartial attitude will meet with the approval of the winning side in Spain, whichever it may be, is doubtful. If Franco's supreme effort fails and his authority is undermined in consequence, the so-called " Government " whose rule now runs in barely a third of the country may yet survive ; in this event Italy may cut her losses in a venture of which she had already grown very weary. French influence would naturally increase, and, strategically, British and French interests in Spanish, particularly Mediterranean, waters have very much in common. Against this, there is the possibility that Russian influence might also regain its place in internal affairs to the detriment of good government : it is an undoubted fact that adversity has largely purged the Republican side of the extreme " Red " elements ; but military success for that side might, at first, mean that political instability which provides golden opportunities for the trouble maker.

If, on the other hand, Franco should win through and dominate the whole of Spain, he will naturally feel that he owes a debt of gratitude

to Germany and Italy, who have given him such valuable support, rather than to Britain, who has been one of the chief advocates of the withdrawal of that support as the price for granting him belligerent rights. Italy, whose help has taken the particularly practical form of fighting personnel as well as material, has given solemn pledges that she has no intention of seeking any Spanish territory as a *quid pro quo*; indeed it seems generally agreed that the surrender of any part of Spanish possessions is the one thing which neither side would ever agree to. Nevertheless, both Germany and Italy have been digging themselves in with Franco's party, and, if he wins, they will undoubtedly secure commercial and economic advantages which may not be offered so readily to Britain.

In other words, it is difficult to see how we shall profit by being the champion of non-intervention, so far as our relations in the near future with a reunited Spain are concerned; yet in the long run we may get our reward for insisting on a *cordon sanitaire* being drawn round this European danger area.

UNITED STATES

Nothing more striking than Mr. Roosevelt's pronouncement of 4th January has appeared to change the foreground of the European landscape since the entry of America into the Great War.

The U.S. President's message to Congress contained the strong implication that his country could no longer remain indifferent to the growth of "more deadly armaments, military and economic," the "threats of new aggression, military and economic," and the "storms from abroad directly challenging the three institutions indispensable to Americans"—religion, democracy, and international good faith.

"The world has grown so small and the weapons of attack so swift that no nation can be safe in its will for peace so long as any other single powerful nation refuses to settle grievances at the council table," was another sentence in this message. This should imply, as a logical sequel, that the United States will be ready to take her place at such councils. A further indication of Mr. Roosevelt's quiet persistence in leading his people to appreciate that the days of security by isolation are over was his remark, "We have learned that God-fearing democracies . . . cannot for ever let pass without effective protest acts of aggression against sister nations, acts which automatically undermine all of us."

American leanings are inherently pacifist, and the President was obviously seeking to placate them when he added: "There are many methods short of war, but stronger and more effective than mere words, of bringing home to aggressive governments the aggregate sentiments

of our own people" ; yet he is too much of a realist to believe that economic and diplomatic pressure will, in the last resort, deter a dictator who has committed himself and his nation to some *coup*. Later in his speech Mr. Roosevelt said, "We have learnt . . . the old, old lesson that probability of attack is mightily decreased by the assurance of an ever-ready defence." He then foreshadowed those plans for a great increase of American armaments which he announced a few days later.

Undoubtedly it is their gradual realization of growing threats to their own vital interests which is compelling the people of the United States to take more interest in external affairs. Those threats may be directed against their own country or the Southern Continent, and they may come from the East or from the West—or both. In any event, it must be obvious that Britain is, once again, in the van of the forces lining up to defend freedom and justice, and if those forces can be brought to include the whole mass of English-speaking peoples, they will be a truly potent factor in ensuring peace and tranquillity in the world.

THE SPANISH CIVIL WAR

ON LAND

The Ebro Front

DURING the period August–October, General Franco's troops, estimated at about 250,000 strong, delivered no less than six counter-offensives on the Ebro front, suffered over 50,000 casualties and advanced only about five miles. On 30th October, the Nationalists launched their seventh attack and were rewarded by the capture of the Sierra de los Caballos, a commanding tactical feature near Gandesa and of the Moro de Ebro bridge, an important link in the Republican lines of communication with Barcelona. In this attack, General Franco claimed the capture of about 1000 prisoners and the destruction of twenty-two aircraft. Forty-eight hours later, a Republican counter-attack is reported to have retaken several of the positions previously lost.

Fighting on the Ebro continued with some gains to the Nationalist forces, who captured Flix, Asco, and Ribarrota on 15th November, thus obtaining control of the West bank of the river above Gandesa. The Republicans holding this sector withdrew across the bridges in an orderly manner with their artillery and material. Both sides made heavy claims and counter-claims as to the results of this prolonged struggle. General Franco announced that the Ebro battle was one of the Republicans heaviest defeats ; they had lost, he claimed, 19,779

prisoners, 14 field guns, 45 trench mortars, 181 machine guns, and 18 Russian tanks, and their casualties amounted to over 75,000. Barcelona declared that their troops still occupied the positions held before the offensive, which began on 25th July ; seven insurgent counter-offensives had been successfully beaten off. Neutral estimates from outside sources gave the losses of each side at about 40,000 men.

The Battle of The Segre

On 23rd December, General Franco launched an offensive on a very large scale against the Republican troops holding the general line Balaguer–Lerida–Seros on the River Segre. The effective defence of this line was vital to the Government as it covered the shortest route to Barcelona and shielded the heart of Catalonia. The depth of the area to be defended, moreover, was strictly limited and averaged only about sixty miles from the River Segre to the Mediterranean coast. The Republican troops, therefore, were faced with the necessity for disputing every yard of ground and were unable to adopt the tactics of withdrawal in the face of superior gun-power. General Franco—well aware of all the circumstances—seems to have decided to throw in every available man and gun in a supreme effort to win the war. The Nationalists concentrated the largest body of troops yet assembled for a single operation during the course of the Civil War : no less than seven Army Corps (including four Divisions of Spanish-Italian Legionaries) totalling about 300,000 combatants, were massed along the West bank of the River Segre, six Corps being in the line and one Corps in General Reserve.

At the end of the first four days of the offensive, the Republicans were still holding out in the central Balaguer–Lerida sector. North and South of this zone, however, the Nationalists had made considerable progress. The Italian Corps, in particular, had made a spectacular advance of over twenty miles in the Seros sector, South of Lerida, had captured Granadella and were threatening the key-point of Borjas Blancas. The progress of the fighting, moreover, disclosed that there was some mystery over the so-called withdrawal of Italian Legionaries from Spain on 15th October, 1938. The Italian " Littorio " Division which, it was understood, had been broken up and repatriated with other troops, made an unexpected appearance in the Granadella sector of the Nationalist offensive, where it gained considerable ground at the expense of very heavy casualties.

On 28th December, the Republican High Command launched a counter-attack with fresh troops in the Granadella area, with the object of supporting their Vth Army Corps, which had been severely shaken

and of relieving the pressure on Borjas Blancas. This operation, on the whole, proved successful, inflicted heavy losses on the Italian Corps and stabilized the situation in that sector. General Franco then intensified the pressure in the North and launched the Aragon Corps against the Artesa–Balaguer sector. These troops broke through at some points and captured the heights of Montero, North-East of Balaguer, but failed to secure the key-point of Artesa.

On 29th December—the seventh day of the offensive, the Republicans still held their main line of works in the central Balaguer–Lerida sector, but their flanks were becoming increasingly threatened by the Nationalist advance. General Franco's offensive had been favoured generally by bright and sunny weather. During the winter months, however, even in 41 to 42 degrees North latitude, the hours of daylight are so limited that they hardly allow time for the development of full co-operation between the attacking infantry and their supporting artillery.

On 3rd January, 1939, the Nationalists made an important advance in the North and claimed the capture of Artesa. The assault was delivered by the 1st Navarrese Division, forming part of the Maestrazgo Army Corps, supported by the left wing of the Aragon Army, pivoting on Balaguer. Two days later, the Italian Army Corps, reinforced by part of the Navarrese Army Corps, again attacked Borjas Blancas, this time with complete success.

The position of the Republican Army was now serious as the main battle position had been pierced and the two key-points of Artesa and Borjas Blancas lost. The Nationalist threat to both flanks had materialized and their advance menaced the Republican communications with Tarragona and Barcelona. In two weeks hard fighting, General Franco's troops had captured about 700 square miles of Catalan territory together with over 20,000 prisoners. Tarragona fell on 15th January, and on the same day the Nationalists occupied the nearby important industrial town of Reus.

PARTIAL ITALIAN WITHDRAWAL

The withdrawal of 10,000 Italian Legionaries from the fighting zone and their embarkation on 15th October at Cadiz for Italian ports formed the occasion for numerous ceremonial parades and addresses behind the Nationalist lines. A parade was held at Logrona, at which General Franco distributed decorations to senior Italian officers and declared that he saluted the world successors of the Roman Legions, come to the rescue against the Bolshevist invasion. He also lauded Signor Mussolini as the " genius with an arm of iron," who had sent the flag of Italy to

mingle with that of Spain. The extent of Italian intervention in Spain can be gauged from the official casualty lists, published in Rome on 13th October. These are: killed, officers and other ranks, 2657; wounded, 8848; captured, officers 3, other ranks 351; died on service, 278. In spite of the departure of these 10,000 Legionaries, there are obviously a considerable number of Italian infantry and airmen still serving in Spain.

IN THE AIR

During the period under review events have shown that the Republican inferiority in the air still persists and that it was a severe handicap to the successful prosecution of their offensive in Aragon. General Franco's airmen were able to deliver continuous and almost unopposed attacks on the Republican lines of communication and to hamper the movements of reserves and supply columns.

On 3rd November, Salamanca reported the destruction of sixty-two Republican aircraft in four days fighting on the Ebro. The more modest Republican claims, however, amounted to only thirteen Nationalist aeroplanes brought down.

Nationalist airmen persisted in their attacks on non-military objectives and civilian personnel. On 8th October, a Nationalist seaplane attacked a train North of Tarragona and killed over 150 people, many of them women. Accurate shooting by Republican A.A. guns repulsed an attack on the Barcelona waterfront by two squadrons, only four people being killed.

An attack on Figueras, on 14th October, by Nationalist aircraft was the subject of an investigation by the British Commission on Air Bombardments, which reported that, except for an Officer Cadet Training School, the town was an open one and contained no military objectives. Seventy high-explosive and incendiary bombs were dropped, resulting in sixteen civilian casualties, of which five were fatal.

Republican fighter aircraft successfully defended the naval base at Cartagena from an attack by bombers flying from a base at Majorca. On 21st October, fifteen Savoia machines raided Tarragona, but were unable to inflict any casualties. On 31st October, a series of heavy air raids on Alicante, Sagunto and Valencia caused seventy deaths and much damage to property. Further Nationalist air raids on Almeria and Tarragona killed over fifty people. Barcelona was raided on 6th, 12th and 13th November and suffered about fourteen killed. On 23rd and 24th November, further raids were launched against Barcelona, Tarragona, Borjas Blancas and some small fishing villages on the

Mediterranean coast; in some cases, machine-gun fire from the air was directed against civilian inhabitants. The Commission for the Investigation of Air Bombardments reported that the bombing of Barcelona must be regarded as " tantamount to deliberate attacks on a civilian population." The attacks on the port area were conducted at such a height and in such a direction as inevitably to jeopardize the lives of the inhabitants of a thickly populated part of the city.

The Nationalist authorities claimed the destruction of 242 Republican aircraft in the Ebro battle. Barcelona, however, counter-claimed with the alleged shooting down of 214 Italian and German machines.

The Nationalist station at Burgos broadcast a warning on 30th November that some 150 named towns and villages in Republican Spain would be bombed from the air. Civilians were advised to remove themselves from the proximity of military objectives. On 4th December, Nationalist bombers raided Barcelona for the 9th time in three days, but were driven off by Republican fighter aircraft without doing much damage.

The Nationalist offensive on the River Segre, which started on 23rd December, coincided with intense air activity against the Republican lines of communications and centres of defence. Borjas Blancas, on the Lerida–Tarragona road, was raided twice. Air attacks were also delivered against Pons, a town North-East of Balaguer, thirty persons being killed.

On 27th and 28th December, Barcelona was again attacked by five Nationalist aircraft while Savoia machines raided Valencia and inflicted a few casualties. One Nationalist aircraft flew low over a small fishing boat off Alicante and machine-gunned the vessel from the air, seven of the crew being hit.

A severe air battle took place over Alfes on the Southern sector of the Catalonian front, where twenty-four Nationalist aircraft claimed to have defeated superior numbers of Republican machines, the latter losing nineteen of their number.

On 3rd January, 1939, the Republican Air Force was reported to have received reinforcements of new machines from abroad. These aircraft were believed to be of the Curtiss type and to possess high speed. A large number of young Spanish pilots, specially trained in the U.S.S.R. to handle this particular type, were also reported to have reached Barcelona. These reinforcements will help the Republicans to offset, to some extent at least, the air superiority which General Franco has achieved largely through Italian assistance.

AT SEA

It was recorded in Navy Notes of last quarter's JOURNAL (page 876) that the Republican destroyer " José Luiz Diez " had attempted to run through the Straits of Gibraltar on the night of the 26th–27th August but had been intercepted by a Nationalist force consisting of the cruiser " Canarias " and three destroyers. The " José Luiz Diez " having been crippled by an 8-in. shell from the former, took refuge in Gibraltar harbour with 26 dead and 10 wounded. She was allowed to remain there until she had completed such temporary repairs as would make her seaworthy.

In the early hours of the 30th December, she endeavoured to leave harbour under cover of darkness and make for Cartagena. The Nationalist naval patrol evidently expected some such movement, and was again lying in wait for her. This force consisted of four minelayers of the " Jupiter " class—vessels of 2000 tons armed with four 4.7-in. guns, supported by two cruisers, one of which was the " Canarias."

It is alleged that Nationalist agents in Gibraltar fired red rockets as the destroyer was leaving. In any event, she was at once spotted and a brief runing fight ensued. The " José Luiz Diez " steered close in shore round Europa point, and having fired all available torpedoes and been damaged by shell fire from the Nationalist ships, she was run ashore in Catalan Bay with four killed and ten wounded, including two officers. H.M.S. " Vanoc " stood by her while her crew and their belongings were transhipped to the Admiralty tug " Rambler " and taken back to Gibraltar. A British infantry guard was placed on board. She was refloated the same evening and towed back to Gibraltar where she has been interned. The crew have also been provisionally interned in the Millhill Barracks.

In the course of the engagement, splinters from the Nationalist shells fell into Catalan Bay village, doing a small amount of damage to property and badly wounding a policeman.

There have been no other naval activities of importance during the past quarter. Air attacks continue to be made from time to time on British merchant ships in Spanish waters. A recent casualty was the s.s. " Mirupano " of 2539 tons, which was hit by a bomb on the 30th December while lying in Valencia harbour. The crew rushed to shelter and no one was hurt. Two days previously the " Marionga " reported that she had been bombed off the Balearic Islands and the crew had taken to the boats, but the ship was not damaged and, the crew having returned, she steamed back to Oran.

AN "OBSERVING OFFICER" IN CZECHOSLOVAKIA DURING THE CRISIS

By MAJOR B. T. REYNOLDS, M.C., R.A. (Retd.).

IT will be remembered that under the Munich Agreement, signed at the end of September, 1938, Germany was to occupy the Sudeten territories which had been the bone of contention between the two countries and had nearly been the cause of a general war.[1] At that moment a German army of some 37 divisions was facing a Czech army of some 25 divisions (both figures are rough estimates) along the whole of the common frontier, which was strongly fortified on the Czech side. Feeling was still running high. The Munich Agreement and the peace that it had so narrowly preserved were still at the mercy of a chance incident.

At this moment a telegram from the War Office interrupted my rueful contemplation of uniform which, after ten years of retirement, resisted all efforts at buttoning. At the War Office I found a Sapper Colonel who had been lent to the Foreign Office to recruit a body of "Observing Officers" and take them out at once to the Sudeten territory. Our function was "to endeavour by your personality and experience to ensure that no incident should be magnified and/or no rumour distorted to give either side an excuse for armed intervention which might precipitate a fresh European crisis." There were to be thirty of us—mostly retired officers of the Army or Navy, with a sprinkling of young serving officers, two ex-detective inspectors of the C.I.D. and one young journalist. Clad in mufti and armed only with a British passport (on arrival we were given authorization papers by the Czech General Staff, but it was many days before we could get any kind of paper from the German Army) we were to be disposed in pairs round several hundred miles of frontier to see that the forthcoming operation went off smoothly. Rather unwillingly I allowed myself to be enrolled and was warned to be ready to fly to Prague at short notice. Twenty-four hours later I left Croydon aerodrome in company with the first batch of seven "Observers"; the remainder were to follow in the course of the next two days.

Arriving in Prague on 1st October one was aware at once of the "atmosphere." I can only describe it as being rather like entering a house of mourning where the relatives strongly suspected one of having poisoned the deceased: probably a Frenchman would have been even more unpopular, but I did not meet one. I was not sorry when I was ordered that same afternoon to go out and take over a sector of some twenty miles in Southern Bohemia, with my headquarters at Budweis.

[1] See "The European Crisis" in the JOURNAL of November, 1938, p. 837.

On reporting to the Czech Colonel commanding, I found that there was a predominantly German village of some 15,000 inhabitants not more than ten miles from Budweis where the Sudeten German Party (known by its initials the " S.D.P.") had armed the inhabitants, turned out the Czech gendarmerie, the officials and the minority and seized power. The German army had already advanced, in accordance with the time-table laid down by the Berlin Commission, to within two miles of this village—named Krumau—and the Czech army had withdrawn, leaving only a screen of gendarmerie and military patrols to keep in touch with the Germans, and to maintain their authority in territory that was still nominally within the borders of the Czechoslovakian Republic. This was obviously a place where an incident might occur and I made it my business to get in touch with those in charge and to watch the situation there.

Krumau was an interesting example of the effect of political propaganda. The inhabitants had been very extensively " worked " and by now had reached a stage where they firmly believed that every Czech was a potential murderer. As Germans and Czechs were extensively intermarried the result was wholesale disruption of families. The former Czech Chief of Police of the town was a case in point : he was married to a German from the Reich and his two sons were in the S.D.P., nevertheless he remained consistently loyal to the government whose salt he had eaten. On the other hand, the bulk of the Sudeten German officials in the Czech service threw in their lot with the S.D.P. The arming of the population had been carried out in no niggardly spirit. On my first visit every male inhabitant from the age of sixteen upwards appeared to have acquired a German steel-helmet, a rifle or sub-machine-gun and a belt-full of stick-grenades. Their military value would have been small—indeed, they subsequently agreed to limit the carrying of arms to the older men after the village idiot, who had been running round with a loaded rifle for some days, finally loosed it off and hit a child—but, situated behind the Czech fortifications, they would have had a considerable nuisance value in the event of war. As it was, their activities were confined to a little sniping at Czech patrols and posts, mostly by night. Being in touch with both them and the Czechs we were able to do something to minimise the military ardour of both sides which, if given rein, must have led to useless bloodshed. There was plenty of excuse for them to have flown at one another's throats. One day the S.D.P. lobbed a hand-grenade into a car-load of Czech gendarmes and knocked out five of them. Next morning the Czechs retaliated by driving a tank into Krumau and shooting up the town. The place was peppered with shell-holes and the walls pockmarked with bullets, but for some unexplained reason not a soul was hit. A Czech patrol of three

infantrymen ran round a corner into some German tanks that had just entered a village in No-Man's-Land. According to the story of one of the survivors, whom I saw next day in a Budweis hospital, the leading tank shouted " Hands up," and fired at the same moment. One of the patrol was killed and two wounded. At one moment the Czechs announced their intention of retaking Krumau by a regular military operation, using a battalion, a battery and a company of tanks. Given that the German army was only two miles away and " straining at the leash," I have not the slightest doubt that such action on the part of the Czechs would have precipitated a first-class incident and quite possibly started up a war. The presence of a British officer on the spot was a powerful factor in preventing this.

One incident which occurred in another sector will suffice to show the extraordinary influence that an impartial observer can wield. Some Czech troops were late in carrying out their retirement from a Sudeten German town. They were waiting in their lorries on the market square ready to move off at the moment when the German army was entering the outskirts of the place. The crowd that had been looking on sullenly now became menacing. A few stones hurtled through the air. The troops crouched down in their lorries, fumbling with the bolts of their rifles. Another few minutes and a nasty incident would have occurred. One of our ex-Detective Inspectors of the C.I.D. who was watching the scene, bowler hat firmly planted on the back of his head, quietly walked up to the people blocking the road and said a few words. Their ranks parted and he motioned to the lorries to drive on.

The Freikorps were in quite a different category to the armed S.D.P. They consisted of Sudeten Germans who had fled over the frontier, with a stiffening of Reich Germans. On some parts of the front they actually accompanied the regular troops in their advance. On one occasion four hundred of them carried a Czech trench in style—after the garrison had withdrawn.

An incident that occurred to me shows the working of the political machine both in front of and behind the line held by the German army. I had to take to Krumau three Czechs who had been ordered by the government in Prague to bring away three truck-loads of paper if these were still outside the line of German posts. I took the precaution of ringing up the Bürgermeister to ask him if I could bring them with safety, and actually went at his invitation. Whilst we were parleying in the Bürgermeister's office three Freikorps men burst in, with rifles at the ready, and tried to seize my Czechs. I adjourned the meeting to the nearest German post and was explaining the situation to an elderly subaltern when we were again interrupted by a " political " who

announced that he had sent for the Gestapo to remove my Czechs. The subaltern was obviously no match for the " political " and I had to exert all my influence to prevent them from being snatched from under my Union Jack. My task was not made any easier by the fact that, at this time, I had no authorization paper from the German army and could only produce my British passport. On seeing this the German subaltern remarked, " I have never seen a pass like that before." " No," I said, " I don't suppose you have. It's pretty strong medicine." Eventually, after adjourning once more, this time to the nearest regimental headquarters, I was able to get an escort to take my party to the German frontier. Mindful of the Freikorps I insisted on the Bürgermeister accompanying us on the return journey through the narrow streets of Krumau and we finally got home without further adventure.

It was very moving to watch the reaction of the Czechs to the changing position of their country. They had mobilized in a spirit of grim determination, prepared to die for a cause. Then, as they saw it, not only were they snatched back willy-nilly from the jaws of death, but the cause in whose service they had counted their lives as nothing was also lost to them. I was in the office of the Colonel commanding in Budweis when a wire came in from Prague giving the full extent of the territory to be surrendered. As we plotted the new frontier on the map, it was obvious for strategic and economic reasons that what was left of Czechoslovakia could only survive with the goodwill of Germany. Strong patrols were on all the streets that night in case discipline should break down. But nothing untoward occurred. The self-control of the Czechs in their hour of trial was almost frightening in its austerity. When President Benesh's farewell speech came through on the wireless the crowds of soldiers and civilians in the cafés rose to listen, their faces completely impassive, and sat down again in silence.

On my sector there were two Czech divisions. The retirement was carried out without a hitch: horses invariably looked well cared-for; arms were kept clean; patrols " in the blue," often in heavily wooded country with S.D.P. and Freikorps snipers about, appeared bright, intelligent and very much " on top of their job." Budweis was a town of some 25,000 inhabitants and contained several thousand troops. I was particularly struck by the fact that in fourteen days I did not see a single " drunk," and this in spite of the fact that there was no embargo on the sale of spirits.

A matter of interest was the position of Sudeten Germans serving in the Czech army. Under the Munich Agreement the majority of them were demobilized and allowed to return to their homes. I saw a number of them behind the German lines, still wearing their Czech uniforms with

a Hakenkreuz chalked on their arms—it would have been a wise precaution to have given them a suit of mufti and taken away their uniform on demobilization. I asked one Czech Colonel if there were any Sudeten German officers in the Czech army. He said there were three in his Regiment (I fancy this was an exceptional case), would I like to talk to one of them ? He introduced me to an elderly Major and left us alone in the room. This officer had served with the Austro-Hungarian army throughout the war and transferred in 1918 to the Czech army with his rank and seniority. He told me that his relations with his Czech comrades had always been pleasant and that, even in the present crisis, he never had the slightest difficulty with the men. He realized that his career was now over and dreaded the future. " Why don't you English reform the King's German Legion ? " he asked me, " They served you well in the Napoleonic Wars. There are plenty like myself who would be only too pleased to get the chance of joining." His attitude might be typical of many of his generation, but I fancy the younger generation think very differently.

For the last part of the time the greater part of my work consisted in calling the attention of the Germans to cases where their troops were in advance of the official line. Mistakes were easy enough to make as the Commission in Berlin was working on one map with a scale of 1/300,000 : the Czechs map was different and its scale 1/50,000. The German map was entirely different again and its scale, I think, 1/100,000. However, even so, there was an obvious tendency on the part of the Germans to " pinch a bit "—a road junction here, a tactically important hill there, and so on. Now that they had given up their fortifications, the mood of the Czechs completely changed. All the fight had gone out of them and a wild rumour circulated that the Germans would be in Prague within a month. The men, who a few days before had regarded us as their betrayers, now looked to us pathetically to save them from the advancing flood. Happily there was a general feeling that " the war was off." As a Czech Gendarmerie Captain put it, " It's bad enough shooting one another when you've got to. But when you haven't I call it damned silly." Animated by this excellent sentiment, the good man led us miles across country behind the German lines to interview various headquarters. Perhaps it was as well that there was a full moon so that the sentries could see my black hat and umbrella, but we never had any trouble. Stumbling across a ploughed field at midnight we once came on a German cavalryman. He was a student and talked English. " If this cursed potato war (Kartoffelkrieg) doesn't end soon I shall have forgotten everything I ever knew. And I have got an examination to pass when I get home."

One German division had overshot its line in a number of places and

I was asked to go and see about it. I met a German subaltern parleying with a Czech Gendarmerie officer and he volunteered to take me to his battalion headquarters. The battalion sent us on to the regiment. Everywhere the Germans commenced by being stiff, but thawed out rapidly. Finally, we were sent on to see the Divisional Commander. He screwed his eyeglass firmly in his eye and looked at the line that I had taken off the control map, brought from Berlin by aeroplane that morning. "Ah," he said, " that's your line, is it ? And this is where my troops are," he chalked another line in on my map. "And I don't move," he went on, " without an order from Berlin." There was not much more to be said. Our business despatched, he became friendly. I told him some of my stories of Krumau when the S.D.P. were in control. " Ha, ha," he laughed, " a regular lot of gangsters they must have been. Just like Chicago ! "

I set out to drive home. My subaltern had ransacked divisional headquarters and piled the car with newspapers. " Must let the lads know what's happening in the wide world in these stirring times," he said. I glanced at the papers. They were *Das Schwartze Korps* and *Voelkische Beobachter*. We talked as we drove through the night. He was an ardent admirer of Napoleon. " You English did a bad day's work when you prevented him from fulfilling his historic mission of uniting Europe." He seemed to have forgotten Blücher and the Befreiungskrieg. " Now the job will have to be done all over again." He harped on the noxious role played by civilians in post-War politics. But the opprobrious epithet " civilian " did not apply to those in charge of the destinies of Germany to-day. His singleness of mind was in refreshing contrast to the obvious discomfort of some of his seniors at having to reconcile the conflicting claims of politics and soldiering. His generation, brought up in the National Socialist school, was not even aware of a conflict of loyalties. Their advancement will be rapid.

The possibility of major incidents was now past, it was clear that there was little more that we could usefully do. The only hope for Czechoslovakia lay in making her peace with Germany : in some ways our continued presence might even prove an embarassment. We were withdrawn to Prague and flew home the next day.

The absence of serious incidents was the proof of the success of our mission, but the situation would have been very different if the discipline of the Czech army had been less outstanding. Perhaps part of the reason for this was to be found in the very close relations that existed between officers and men. It was the duty of every subaltern officer to give his men a daily talk on the general situation and everything possible was done to induce them to base their position and the discipline of the army

on their personality rather than on their badges of rank. Most armies pay lip-service to this ideal, but the Czechs came very near to realizing it.

SINO-JAPANESE WAR ON LAND

THE YANGTZE FRONT

DURING October, 1938, Japanese forces continued their advance up the Yangtze River and, on the 25th, entered Hankow, which had been previously set on fire by the retreating Chinese troops. Before departing by air for an unknown destination, Marshal Chiang Kai-Shek directed that the Army should abandon the last line of defences about twenty miles North and East of Hankow and should withdraw southwards. The Japanese urged the pursuit with their usual vigour, but were unable to effect the destruction of any large fraction of the Chinese Army, although 8000 Chinese soldiers were believed to have been drowned in Lake Tunting, a hundred miles South of Hankow, when their transports were sunk by bombs from the air.

On 31st. October, Japanese forces marching North from Hankow endeavoured to isolate and cut off Chinese troops estimated at over 250,000, centred on Sinyang on the Pekin–Hankow railroad. The Chinese, however, succeeded in breaking off the action and withdrawing to the West.

By 15th November, the Chinese forces from Hankow had occupied a new line about sixty miles South of Lake Tunting, running West and East from Siangtan via Chuchow and Liling to Pinghsiang, where their right flank established touch with strong Chinese forces about Nanchang.

A Japanese detachment crossed the Yellow River on 24th November at Tungkwan in order to invade the province of Shanshi and intercept the arms traffic with the U.S.S.R. Intensive guerilla warfare was being carried on in Shansi; and some 10,000 Chinese troops, organized in small bands were reported to be active in the South-West corner of the province.

For some time aerial activity had been practically confined to Japanese aircraft, while the remains of the Chinese air force seemed to have been withdrawn for reorganization and re-equipment.

THE CANTON FRONT

On 11th and 12th October, 1938, the Japanese opened up an entirely new theatre of operations and landed 35,000 men in Bias Bay, forty miles East of Hong Kong, with the object of capturing Canton. The weak Chinese forces on the spot offered hardly any resistance and

retreated rapidly on Canton, which they set fire to and evacuated on 20th October. The Japanese entered the burning city the next day. On 24th October, landing parties from Japanese warships captured the Bocca Tigris forts near the mouth of the river and removed the boom. The Japanese Naval C.-in-C. reported, on 31st October, that the Canton River had been cleared by Japanese warships and announced that the South China Fleet would carry the war up river.

On 24th October, there occurred an unfortunate incident involving damage to the British gunboat "Sandpiper" moored in the Hsiang River near Changsha. Although she was plainly marked with the British colours and her location had been notified to the Japanese authorities, she was attacked by six Japanese bombers and slightly damaged. The Japanese excuse was that the vessel was lying in proximity to some Chinese junks. The attack, they said, was delivered by mistake: this is the routine explanation which is offered by the Japanese authorities after each successive outrage. Consequent on a protest from the British Government, the British Naval C.-in-C. received an apology from the Japanese naval authorities expressing regret and promising adequate compensation.

On 1st November, Japanese troops landed at Futsing, about thirty miles South of Foochow, where conditions were reported to be chaotic. The several landings of Japanese forces at Foochow, Amoy and other points may indicate a desire to secure the West side of the Formosa Strait and to obtain control of this area. The shortest sea routes from Hong Kong to Shanghai (853 miles) and from Hong Kong to Nagasaki (1076 miles), it should be noted, pass through this Strait.

Reports reached Hong Kong on 4th November that Marshal Chiang Kai-Shek had concentrated 200,000 well-equipped troops from Kwangsi at a point East of Wuchow with the object of retaking Canton. The Chinese counter-offensive made some progress and about a fortnight later Chinese troops had succeeded in re-establishing themselves at many points within twelve to twenty miles of Canton City, where however the Japanese retained full control.

A tense situation was created on 27th November, when Japanese forces, which had landed at Namtao, near the border of British territory in the vicinity of Hong Kong, pursued a Chinese detachment over the boundary line and killed several Chinese soldiers. A British officer intervened and, after a heated discussion, persuaded the Japanese commander to withdraw his men from the frontier line.

By 12th December, Chinese troops had reoccupied Waichow, Poklo and Shumchun, a short distance North East of Hong Kong. The Japanese, who have presumably switched over their land communica-

tions from Bias Bay to the sea route up the mouth of the Canton River, do not appear to have resisted the Chinese advance in this quarter.

With the coming of winter, military activities have perforce died down. Peace terms—drawn up in phrases of studied vagueness—have been published by the Japanese Cabinet, but these, involving as they did the military occupation of wide areas of China, have not been regarded as worth consideration by Marshal Chiang Kai-Shek and his advisers.

There was also stock-taking of gains—mostly Japanese—and of losses—mostly Chinese. Tokyo announced that, up to 30th November, 1938, Japanese dead in China amounted to 47,133: this figure was believed by neutral observers to be substantially accurate. Chinese total losses were estimated by Tokyo at about 2,000,000, of whom 823,300 dead were alleged to have been counted on the various battle-fields. Japanese captures of material included 208,000 modern rifles, 11,000 machine guns, 1200 trench mortars, and 680 field and mountain guns.

The Chinese situation, however, at the end of 1938, though gloomy, was not desperate. Their field armies were intact and were still capable of resistance; guerillas were active in Shansi, Honan and Hupeh, where the Japanese troops were confined to the larger towns and railway stations; the southern section of the Peking–Hankow railway, in particular, had been almost put out of action by guerilla bands and was littered with broken wagons and wrecked troop trains. Above all, the motor-road from Burmah to Yunnan had been completed. This artery, which runs from Mandalay via Lashio and Muse to Paoshan, will enable commercial and other articles to flow freely into China and will give the Chinese an opportunity to keep touch with the outside world, a facility which the Japanese naval blockade has denied to them.

CORRESPONDENCE

[Correspondence is invited on subjects which have been dealt with in the JOURNAL, *or which are of general interest in the Services. Correspondents are requested to put their views as concisely as possible, but publication of letters will be dependent on the space available in each number of the* JOURNAL.—EDITOR.]

OUR TRADITIONAL STRATEGY

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—I was glad to read in your last number the implied or open condemnation by Captain Curteis of the theory many writers of eminence have styled "our traditional strategy," from which they have evolved false and mischievous doctrines.

This "traditional strategy," fairly stated by Captain Curteis to consist of applying pressure on an enemy by sea and financial power, and, as modern conditions demand, air-power also, but without a great army in the field, is deduced from a curious reading of our long struggle against the French revolutionary and Napoleonic armies. How anyone can commend our strategy in that confused period is hard to comprehend. The "tip and run" expeditions, many of them unqualified disasters, the dispersal of force, the squandering of men and money, the want of a definite purpose, all displayed in that long drawn-out conflict, should stamp conclusively such strategy as futile. And only national vanity can claim that in the end it proved successful. It was Moscow and Leipzig that procured Napoleon's downfall, and not, as the traditional strategists claim, our sea-power and money. Without those two great military defeats Napoleon might have died comfortably on his throne in due course of nature, defying all our efforts to unseat him, while keeping us in a constant state of alarm and insecurity.

Then what a contrast the Waterloo campaign was. There with an army not nearly as strong as it should and might have been, we took our place on the right of our allies, and in six weeks, with only military pressure, we did with complete success what had previously taken us twenty years to effect. Why should that not be our standard of traditional strategy? In the Great War we quite properly followed the Waterloo example, with complete success in the end, but not so promptly as would have been the case if we had had an adequate army at the commencement. It is folly to ignore or mis-read these great lessons of the vital necessity of a strong field army in times of stress and danger.

Naval and air forces are primarily defensive forces; that is to say, their chief purpose is to defend our base, protect our trade and possessions and convoy our overseas expeditions. And these uses are of the very first importance as without complete security from attack we are powerless for any offensive action. But for decisive effect a strong and well-equipped army always has been, and, assuredly, always will be, necessary. How, or where, that army can best be employed must depend on the conditions prevailing. When Wellington was asked in 1815 what his plan was in the event of Napoleon invading Belgium, he replied: "Plan! I

have no plan ; I'll be guided by circumstances." That is the sensible view to take of such matters, but the weapons must be in readiness or quickly forthcoming, and great men are needed to wield them.

C. O. HEAD,
Lieut.-Colonel (retired).

SHREWSBURY,
10th November, 1938.

FIRE SUPPORT FROM THE AIR

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—I have just read Colonel Everett's interesting article " Fire Support from the Air " on which you invite correspondence.

In the author's opinion, one of the means of producing covering fire from the low-flying aircraft should be by special aircraft designed to fire down at the ground while flying. I gather that to use the large battery of machine guns, presumably fixed, all firing forward and downward, the aircraft must fly along a linear target to obtain the best results. Infantry, whether in the first or final stages of a trench system, will form a linear target.

The author dismisses the effectiveness of an A.A. machine gun by assuming that it will be difficult for the gunner to get his sights on the aircraft in the time available. However, as the aircraft will be flying very low and presumably along the trench system, the following organization of A.A. defence suggests itself :—

To place A.A. L.M.Gs at intervals in the trench system with lines of fire both up and down the system, so that if an aircraft approached from behind one gunner's left ear it would be flying straight into the next gunner's sights and probably directly away from another gunner's sights.

In my opinion this is the easiest target for any A.A. L.M. gunner. Furthermore, the gunner would be undisturbed in his aim by other forms of covering fire as this presumably would have to cease when the very low-flying aircraft form commenced.

" ANOTHER P.B.I."

9th December, 1938.

REGIMENTAL PAPER WORK

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—Major R. R. Dauban of the Royal Artillery, in his most excellent article entitled " The Simplification and Reduction of Regimental Paper Work," observed that my earlier article on the same subject was too limited in scope. I fully agree that it was limited in scope, but the real reason for this is that I am not sufficiently optimistic to hope that anything approaching the Utopian reorganization that Major Dauban visualizes is at the moment financially possible. I would therefore still suggest that it would be of great value if an effort was made to rid the army of what, I repeat, is unnecessary paper work.

I maintain, in fact, that paper work can be cut down, and that it would be a sad mistake to adopt a defeatist attitude and do nothing about it, but merely to wait until, in the distant future, a larger staff is provided to cope with it.

M. P. HUTHWAITE,
Captain,
The Loyal Regiment.

ALDERSHOT,
November, 1938.

NAVY NOTES

GREAT BRITAIN

The Royal Visit to Canada

It is officially announced that on the occasion of Their visit to Canada, Their Majesties will sail in H.M.S. " Repulse," escorted by two of His Majesty's ships of the Second Cruiser Squadron.

The Band of the Royal Marines, Portsmouth Division, from Eastney Barracks, will embark for the tour. The last occasion on which a full band of the Royal Marines accompanied the Sovereign abroad was in 1911, when the R.M. Band from Portsmouth went with King George V to India for the Delhi Durbar.

The Late Queen Maud of Norway

The body of the late Queen Maud of Norway was conveyed from London to Portsmouth on 23rd November, and embarked in H.M.S. " Royal Oak," accompanied by King Haakon and the Crown Prince. The ship left Portsmouth on the 24th, flying the Norwegian flag at half-mast at the peak and the flag of King Haakon as an Honorary Admiral in the Royal Navy at the mainmast.

An escort was furnished by the destroyers " Brilliant," " Fame," " Keith," and " Bulldog." The vessels arrived at Oslo on 26th November. A bearer party of naval petty officers and non-commissioned officers of the Royal Marines was provided to convey the Queen's coffin from the ship's barge to the funeral car.

Roumanian State Visit

On the occasion of their State visit to the King and Queen at Buckingham Palace, King Carol of Roumania and the Crown Prince Michael travelled from Boulogne to Dover on 15th November in the new destroyer " Sikh," Commander J. A. Giffard, accompanied by a naval escort of destroyers and an air escort of aeroplanes of the Royal Air Force. The return journey on 18th November was also made in H.M.S. " Sikh."

Funeral of Kemal Atatürk

Admiral Sir Dudley Pound, Commander-in-Chief in the Mediterranean, attended the funeral of Kemal Atatürk in Angora on 21st November. He arrived at Istanbul in H.M.S. " Malaya " from Malta. A contingent of two hundred British seamen, and the Royal Marine band from the " Malaya," took part in the funeral ceremonies.

The Fleet Mobilization

The decision to mobilize the Fleet on account of the national emergency was taken on the afternoon of 27th September, and published in the morning newspapers of the 28th. The Royal Proclamation was not issued until 11 a.m. on 28th September. The first man arrived at his Depot at 6 a.m. that day. By 8 a.m., 200 men had arrived at one Depot, and 4000 by the end of the same day.

Altogether about 29,000 men were called up, rather less than half of the number available.

On 1st October, the day following the return of the Prime Minister with the Munich agreement, normal leave was granted at the ports, and a number of reservists who had not been allocated to ships were sent back to their homes. Other reservists were released by 10th October, except for a small number retained for a short while on essential services.

In the House of Commons on 23rd November, the Parliamentary Secretary stated that the cost of the recent mobilization of the Fleet and of measures taken consequent thereto, apart from certain expenditure on measures for which provision would in any case have been required later, was provisionally assessed at a little less than £1,000,000. Mobilization plans worked smoothly and efficiently.

A message from the Admiralty was published by the various Commanders-in-Chief on 5th October expressing to all officers and men concerned their appreciation of the work performed in carrying out the order to mobilize. The extent of the mobilization ordered was such that complications, which could not be foreseen, threw extra strain on the drafting personnel; and the early release of reservists added to that strain. The Board congratulated all officers and men of the mobilization organization on the initiative and resource displayed in dealing with an unprecedented situation.

Supplementary Estimate

A Supplementary Estimate dated 14th November, 1938, provided for an additional 27,500 officers and men. The revised estimate was for 146,500, as compared with the original estimate of 119,000, these figures representing the maximum bearing in both cases.

An explanatory note stated that as a result of the mobilization of the Fleet and other measures taken in connection therewith, the total numbers borne during the recent crisis temporarily reached a figure estimated at, but not exceeding, 146,500. It was too early to estimate precisely the numbers which will be borne at the end of the current financial year, but it is possible that a figure of about 121,000 may be reached. The excess over the original estimate of 119,000, if it occurs, will be due to the inclusion in Vote A of additional Fleet Air Arm personnel.

Flag Appointments

Plymouth.—Admiral Sir Martin Dunbar-Nasmith, V.C., K.C.B., assumed command as Commander-in-Chief at Plymouth on 24th October, in succession to Admiral the Hon. Sir Reginald A. R. Plunkett-Ernle-Erle-Drax, K.C.B., D.S.O. This change was to have taken effect on 30th September, but was postponed on account of the national emergency.

2nd Battle Squadron.—Rear-Admiral Lancelot E. Holland has been appointed to be Rear-Admiral, 2nd Battle Squadron, in succession to Rear-Admiral Lachlan D. I. MacKinnon, C.B., C.V.O., to date 10th January, 1939.

Assistant Chief of Naval Staff.—Captain Harold M. Burrough, R.N., has been appointed Assistant Chief of Naval Staff, in succession to Rear-Admiral Holland, to date 10th January, 1939.

Second-in-Command, Mediterranean.—It was announced on 9th December that Vice-Admiral Geoffrey Layton, C.B., D.S.O., had been appointed Vice-Admiral Commanding 1st Battle Squadron, and Second-in-Command, Mediterranean Fleet, to date January, 1939. This appointment was to take effect when H.M.S. " Hood "

left the Mediterranean Fleet, and the appointment of the Rear-Admiral, 1st Battle Squadron, was then to lapse.

DEPUTY CHIEF OF NAVAL STAFF.—The appointment of Vice-Admiral Andrew B. Cunningham, C.B., D.S.O., as a Lord Commissioner of the Admiralty and Deputy Chief of Naval Staff, in succession to Admiral Sir William M. James, K.C.B., took effect on 14th November, 1938.

MEDITERRANEAN COMMAND.—Admiral Sir Dudley Pound, G.C.V.O., K.C.B., who would normally have been relieved as Commander-in-Chief, Mediterranean about the end of March on completing three years, has had his tenure of this command extended for at least a year. Admiral Pound visited London at the end of November last to take part in discussions at the Admiralty with the Naval Staff on general questions affecting the fleet.

THIRD CRUISER SQUADRON.—Rear-Admiral Henry R. Moore, C.V.O., D.S.O., has been appointed Rear-Admiral Commanding, Third Cruiser Squadron, in succession to Rear-Admiral Lionel V. Wells, C.B., D.S.O., to date 31st March, 1939.

FLAG PROMOTIONS AND RETIREMENTS

Rear-Admiral Bertram H. Ramsay, C.B., M.V.O., has been placed on the retired list, to date 10th October, 1938.

Rear-Admiral the Hon. Edmund R. Drummond, C.B., M.V.O., has been placed on the retired list, to date 25th October, 1938.

Vice-Admiral Sir Wilfred F. French, K.C.B., C.M.G., has been placed on the retired list, to date 21st October, 1938. In consequence, Rear-Admiral James A. G. Troup, C.B., is promoted to Vice-Admiral in H.M. Fleet, to date 21st October, and placed on the retired list, to date 22nd October, 1938. Vice-Admiral Troup was to continue in his present appointment as Director of Naval Intelligence until 7th February, 1939.

Rear-Admiral Geoffrey Layton, C.B., D.S.O., was promoted to Vice-Admiral in H.M. Fleet, to date 22nd October, 1938, and reappointed as Vice-Admiral Commanding Battle Cruiser Squadron and Second-in-Command, Mediterranean Fleet, on promotion.

Vice-Admiral Sir Gerald C. Dickens, K.C.V.O., C.B., C.M.G., has been placed on the retired list, to date 29th November, 1938. In consequence, Rear-Admiral John A. Edgell, C.B., O.B.E., is promoted to Vice-Admiral in H.M. Fleet, to date 29th November, and placed on the retired list, to date 30th November, 1938. Vice-Admiral Edgell will continue in his present appointment as Hydrographer of the Navy.

Rear-Admiral Lachlan D. I. MacKinnon, C.B., C.V.O., is promoted to Vice-Admiral, to date 30th November, 1938, and placed on the retired list, to date 11th January, 1939.

Rear-Admiral Richard H. O. Lane-Poole, C.B., O.B.E., is promoted to Vice-Admiral, to date 11th January, and placed on the retired list to date 12th January, 1939.

Rear-Admiral Guy C. C. Royle, C.B., C.M.G., is promoted to Vice-Admiral, to date 12th January, 1939, and reappointed as Vice-Admiral, Aircraft Carriers.

The following officers are promoted to Rear-Admiral in H.M. Fleet, to date 10th January, 1939:—

Captain Arthur J. L. Murray, D.S.O., O.B.E., A.D.C.
Captain Eric R. Bent, D.S.C., A.D.C.

Captain Henry E. C. Blagrove, A.D.C.
Captain Henry P. Boxer, A.D.C.
Captain George P. Thomson, O.B.E., A.D.C.
Captain (Commodore First Class) Tom S. V. Phillips, C.B., A.D.C.
Captain Algernon R. Smithwick, D.S.O., A.D.C.
Captain Charles O. Alexander, A.D.C.
Captain Roderick B. T. Miles.
Captain William F. Wake-Walker, O.B.E.
Captain Frederic A. Buckley.
Captain Henry B. Maltby.
Captain Herbert Pott, M.V.O.
Captain William S. Chalmers, D.S.C.
Captain (Commodore Second Class) Stuart S. Bonham-Carter, C.V.O., D.S.O.

The following officers are placed on the retired list, to date 11th January, 1939 :—

Rear-Admiral Eric R. Bent, D.S.C.
Rear-Admiral Henry P. Boxer.
Rear-Admiral George P. Thomson, O.B.E.
Rear-Admiral Algernon R. Smithwick, D.S.O.
Rear-Admiral Charles O. Alexander.
Rear-Admiral Roderick B. T. Miles.
Rear-Admiral Frederic A. Buckley.
Rear-Admiral Henry B. Maltby.
Rear-Admiral Herbert Pott, M.V.O.
Rear-Admiral William S. Chalmers, D.S.C.

Rear-Admiral Tom S. V. Phillips, C.B., is reappointed in his present appointment (Commanding Home Fleet Destroyer Flotillas) on promotion.

Admiral the Hon. Sir Matthew R. Best, K.C.B., D.S.O., M.V.O., is placed on the retired list at his own request in order to facilitate the promotion of younger officers, to date 14th January, 1939.

Vice-Admiral Sir Reginald G. H. Henderson, K.C.B., is promoted to Admiral, to date 14th January, 1939.

Rear-Admiral Robert R. T. Raikes, C.B., C.V.O., D.S.O., is promoted to Vice-Admiral, to date 14th January, 1939.

Awards for Service in Yangtse River

The announcement of the award of the following honours to officers and men of the Royal Navy and Mercantile Marine in recognition of their services on the Yangtse River, China, in December, 1937, appeared in the *London Gazette* of 2nd December, 1938 :—

D.S.O.

Captain G. E. M. O'Donnell, R.N., late Chief Staff Officer to the Rear-Admiral, Yangtse.

This officer was present in H.M.S. " Ladybird " during a bombing attack on British shipping at Wuhu on 5th December, 1937. Though painfully wounded in the right hand, he placed himself under the orders of the Commanding Officer when the helmsman of H.M.S. " Ladybird " was hit, and took the wheel himself. Shortly afterwards, and with no regard for his own safety or his injury, he landed among hostile soldiery and proceeded to the shore headquarters to protest, and was in time to prevent more than one round being fired at H.M.S. " Bee."

Lieutenant-Commander H. D. Barlow, R.N., H.M.S. " Resolution."

This officer was in command of H.M.S. " Ladybird " during a bombing attack on British shipping at Wuhu on 5th December, 1937. He was slightly wounded, but acted with promptitude and decision in most trying conditions and used his ship and the tug " Chanyung " to the best advantage in attempting to save life and property.

In command of H.M.S. " Ladybird " during the attack on this ship and H.M.S. " Bee " at Wuhu on 12th December, 1937, this officer drew the fire of the shore batteries. He handled his ship ably, coolly, fearlessly and with resolution, showing complete disregard for his own safety, being only concerned with the safety of his ship and ship's company.

O.B.E.

Lieutenant-Commander J. I. M. Ashby, R.N., H.M.S. " Drake."

This officer was in command of H.M.S. " Cricket " during a bombing attack on the shipping concentration at Hsia-San-Shan on the afternoon of 12th December, 1937. On three separate occasions the concentration was attacked by aircraft and considerable damage was wrought. On each occasion, fire was opened by H.M.S. " Cricket " and H.M.S. " Scarab," and this action, which required considerable moral courage on the part of Lieutenant-Commander Ashby, undoubtedly largely contributed to the safety of the shipping and the avoidance of further loss of life. The officer acted throughout in a cool and seamanlike manner, and with disregard for his own personal safety.

D.S.C.

Mr. J. W. Hurst, O.B.E., Admiralty Pilot, Yangtse River.

On the morning of 5th December, 1937, during the bombing of British shipping in Wuhu, Mr. Hurst took control of the tug " Chanyung," displaying remarkable powers of command over a panic-stricken native crew. By his seamanlike and fearless handling of the tug he made possible the rescue of the ship's company of s.s. " Tuckwo " from a difficult and dangerous situation.

D.S.M.

Officers' Steward First-Class Yueng Chang Kaig.

In conjunction with Mr. Hurst he raised a scratch crew to man the tug " Chanyung " and was thereby instrumental in rescuing the crew of s.s. " Tuckwo."

Medal of the O.B.E.

Chief Engine-Room Artificer Second-Class Arthur Brook.

During the attack on H.M.S. " Ladybird " and H.M.S. " Bee " at Wuhu on 12th December, 1937, this rating displayed courage, initiative and resource in obtaining high speed at short notice while the ship was under heavy fire.

Petty Officer George David Hawkins.

During the attack on H.M.S. " Ladybird " on 12th December, 1937, the majority of ratings were under cover of some sort, but this rating on the forecastle was fully exposed. The Commanding Officer of H.M.S. " Ladybird " gave the order for " full steam on the capstan and clear the forecastle," relying on the capstan to stop when the anchor came home. This rating, however, remained, taking what cover he could, and shut off steam when the painted cable started coming in. His action was most meritorious.

United States Awards

The American Ambassador, on behalf of the President of the United States, presented awards on 18th November which had been authorized by the Senate and

House of Representatives to the following officers of the Royal Navy, for their services and co-operation in assisting with the recovery of the survivors of the U.S.S. " Panay " when that vessel was bombed by Japanese aeroplanes near Nanking on 12th December, 1937 :—

Vice-Admiral Lewis G. E. Crabbe, C.B., C.I.E., D.S.O.—The Navy Cross.

Captain G. E. M. O'Donnell, R.N.—The Distinguished Service Medal.

Lieutenant-Commander H. D. Barlow, R.N.—The Navy Cross.

To Mr. Christopher Holt, acting on behalf of his father, Rear-Admiral R. Vesey Holt, C.B., D.S.O., M.V.O., now serving as Senior Naval Officer, Yangtse, the Ambassador presented the Distinguished Service Medal.

Personnel

Rank of Re-employed Officers.—It has been decided that an officer who has received a step in rank on or after retirement (except where this step was granted automatically by virtue of and in strict seniority) will, while serving, use the title and wear the uniform of the rank last held on the active list at the date of retirement, unless he has been specially appointed in a higher rank.

Explaining the reasons for this order in the House of Commons on 16th November, Mr. Shakespeare said that the former regulation whereby retired officers recalled to active service were allowed to retain the uniform and title of a rank higher than that to which they were appointed was found during the recent emergency to create such inconveniences that it was decided that all such officers should in future wear the uniform and use the title proper to the appointments they were given. It involves no alteration in the pay of these officers nor in their right to use the higher title and appropriate uniform when they are not actually in service.

Ex-R.N.R. Officers and Specialization.—Officers transferred to the Royal Navy from the R.N.R. will be eligible to specialize in the following branches :—Submarines, Fleet Air Arm, Anti-Submarine, Physical and Recreational Training, and Hydrographic Surveying. In the event of an officer being specially recommended to specialize in gunnery, torpedoes, navigation or signals, the case will be considered on its merits, having regard to the number of candidates for specialization from the general list. Except for the Fleet Air Arm, the number of specialists required is not likely to be large.

Officers' Welfare Guide.—A new " Divisional Officers' Index Guide to Welfare Subjects " has been produced for issue to all ships. It is intended to assist officers to find the authoritative regulations and information on a number of subjects connected with the welfare of their men, and so help in the solution of difficulties which arise in regard to health insurance and similar matters.

Language Study.—In a report from the Commodore Commanding the South America Division, attention is drawn to the desirability of naval and marine personnel acquiring a knowledge of the Spanish language. In view of the obvious advantage of a knowledge of local languages, their Lordships urge naval and marine officers on other stations to lose no opportunity of acquiring some conversational ability in the languages spoken. Service conditions do not permit of intensive study, and for this reason the appointment of fully qualified interpreters is necessary, but the number of these is limited, and therefore the presence of personnel with a general knowledge of a language can prove extremely useful. The fact that an officer has acquired some conversational ability in a language is to be specially noted in his reports.

FUNERAL PROCEDURE.—Their Lordships have decided that at naval funerals the bugle call " Rouse " will follow, after a short pause, the sounding of " Last Post." Officers' salutes with the hand will be confined to the single occasion when the armed party present arms after fixing bayonets. The position at the salute is to be held during the sounding of " Last Post " and " Rouse," which follow immediately on the " Present Arms." The sounding of the Commodore's Salute between volleys is to be discontinued.

HONORARY CHAPLAINS TO THE KING.—The King has been pleased to approve that officers holding the appointment of Honorary Chaplain to the King should be permitted, on vacating the appointment, to wear their special badge in miniature. The miniature badge should be half the size of the badge worn by officers holding the appointment.

MATERIAL

1938 PROGRAMME.—The following vessels of this programme had been ordered up to the end of the year :—

" Implacable," aircraft-carrier, Fairfield Shipbuilding Company.
" Charybdis," cruiser, Cammell Laird and Co.
" Cleopatra," cruiser, Hawthorn, Leslie and Co.
" Scylla," cruiser, Scotts' Shipbuilding Company.
" Tetrarch," submarine, Vickers-Armstrongs, Ltd.
" Talisman," submarine, Cammell, Laird and Co.
" Torbay," submarine, Chatham Dockyard.
" Locust," river gunboat, Yarrow and Co.
" Mosquito," river gunboat, Yarrow and Co.
" Abdiel," minelayer, Alex. Stephen and Sons, Govan, Glasgow.
" Latona," minelayer, J. I. Thornycroft and Co., Southampton.
" Manxman," minelayer, J. Samuel White and Co., Cowes.
" Hecla," destroyer depot-ship, John Brown and Co.
" Bownet," " Burgonet " and " Dragonet," boom defence vessels, Blyth Dry Docks and Shipbuilding Co., machinery by North-Eastern Marine Engineering Co.
" Signet " and " Sonnet," boom defence vessels, Blyth Dry Docks and Shipbuilding Co., machinery by Whites Marine Engineering Co.
" Marauder," fleet tug, Fleming and Ferguson, Paisley.

The name of " Adamant " has been approved for the submarine depot-ship of the 1938 programme, and " Unicorn " for the Fleet Air Arm supply and repair ship. Contracts for these had not been placed up to January.

1937 PROGRAMME.—All the ships of this programme are in hand. The following have been launched :—

" Kelly," flotilla leader, 25th October, by Hawthorn, Leslie and Co.
" Kipling," destroyer, 23rd December, by Yarrow and Co.
" Thistle," submarine, 25th October, by Vickers-Armstrongs, Ltd.
" Pelican," escort vessel, 12th September, by Thornycroft and Co.
" Speedy," minesweeper, 23rd November, by Hamilton and Co.
" Dragonfly," river gunboat, 8th December, by Thornycroft and Co.
" Redstart " and " Ringdove," minelayers, launched April and June, by Henry Robb, Leith, and since completed.

BATTLESHIP'S NAME.—It has been decided that the name " Duke of York " is to be given to the battleship of the 1937 programme now being built by Messrs. John Brown and Co., Ltd., Clydebank, instead of the name " Anson."

1936 PROGRAMME.—All the destroyers of this programme have been launched, those of the " Tribal " class during 1937, and those of the " Javelin " type during 1938. Of the former, the " Sikh " was completed on 12th October ; the " Somali " on 7th December ; and the " Ashanti " and " Eskimo " later in that month. The " Javelin " class are due for completion in the Spring of 1939.

The last of the submarines of the 1936 programme to be launched were the " Trident," by Cammell, Laird and Co., Birkenhead, on 7th December, and the " Tribune," by the Scotts' Shipbuilding Company, Greenock, on 8th December. The last of the three small submarines of this programme, the " Ursula," has been completed, and commissioned for trials and service at Barrow on 29th October.

The escort vessel " Egret " was completed on 10th November at Cowes and delivered at Portsmouth. The " Auckland," of the same class, left Greenock on 16th November for Portsmouth on completion. They have been allocated for duty in the Red Sea and on the Africa Station respectively. All the minesweepers of the programme were completed in the summer of 1938.

1935 PROGRAMME.—The cruiser " Liverpool " left the Govan shipyard of the Fairfield Company on final completion on 2nd November for Chatham. She visited the port of Liverpool early in January to receive a presentation before proceeding to the East Indies to replace the " Emerald." The " Gloucester " commissioned for trials at Devonport, where she was built, on 4th November, and was due to complete about the end of January for service as flagship in the East Indies in place of the " Norfolk."

All other vessels of this programme had been finished at the end of 1938 except the submarine " Triton."

1934 PROGRAMME.—The aircraft-carrier " Ark Royal " was commissioned at Birkenhead on 16th November, three years and two months after her date of laying-down (see " Fleet Air Arm ").

REOPENING OF ROSYTH DOCKYARD

In the House of Commons on 7th December, Mr. Shakespeare, Parliamentary Secretary to the Admiralty, announced that, after careful consideration, it had been decided that the needs of the growing Fleet required that steps should be taken to reopen Rosyth Dockyard on a limited scale.

It was contemplated that the facilities to be provided would eventually enable some two hundred additional men to be employed and render possible refitting in the yard some vessels of small class. As far as possible local people would be employed.

Rosyth Dockyard was reduced to a care-and-maintenance status in 1926. The only ships since stationed there have been destroyers and trawlers in maintenance reserve, and since April, 1937, the boys' training ship, H.M.S. " Caledonia."

NURSING SERVICE RESERVE

A scheme of personal enrolment has been instituted in connection with Queen Alexandra's R.N. Nursing Service Reserve, which is maintained for the purpose of supplementing the Nursing Service in the event of war or a national emergency. The enrolment of nurses will not involve any interference with their civilian professional duties. Nurses will be required to undertake to report for duty in naval hospitals and hospital ships when called upon in the event of a national emergency. Applicants should be under 45 years of age, and State registered if

training was completed after June, 1925. They should write to the Admiralty, S.W.1, for copies of the regulations and forms of application.

FLEET AIR ARM

NEW DEVELOPMENTS.—The present strength of about 3000 officers and men in the Fleet Air Arm is to be increased to 10,000 by 1942, by which time it is hoped to relieve the R.A.F. personnel serving with the Navy, except for certain highly-skilled men. The aerodromes at Lee-on-Solent, Ford—near Arundel, Worthy Down—near Winchester, and Donibristle—Fife, will be handed over to naval control. Other air bases for naval use will be provided; the system under which hitherto nearly all naval air training has been done from carriers is expensive and inconvenient. A base for maintenance, or naval air dockyard, is also to be provided, at which repairs can be executed more satisfactorily than in a carrier, and from which reserve aircraft can be drawn as needed.

From 9th January, the Air Material Department at the Admiralty was re-organized in two divisions. The first under Captain (E) D. C. Ford, who was appointed Director of Aircraft Maintenance and Repair, will be staffed by naval engineer officers and will be responsible for the technical training and supervision of the personnel of the new air maintenance branches as well as the upkeep and repair of aircraft. The second, under an executive officer with flying qualifications, Captain M. S. Slattery, will be concerned with the administration of equipment and supply.

The direct entry of mechanics between the ages of 17½ and 25 was started on 1st January. The Navy has at present no trained artificers capable of aircraft maintenance, and none can be spared from the engineering ratings owing to fleet expansion. Over 1000 men are needed, 300 immediately. They may enrol under a special service engagement for seven years, followed by five years in the Reserve, or for twelve years continuous service with the opportunity of re-engaging for a further ten years to complete time for pension.

POSTS AT SHORE BASES.—The increase in the Fleet Air Arm and the transfer of the shore bases used by it to naval control will involve an addition to the requirements for Captains and Commanders with experience in the F.A.A. As a special measure to meet the requirements of the particular situation, their Lordships have approved that a small number of Commanders and Lieutenant-Commanders with practical experience of the Fleet Air Arm who have passed out of the normal zone for promotion to Captain and Commander respectively shall be promoted to Captain (A) and Commander (A). These officers will be employed in general in shore appointments, but may, if required, be employed afloat with the Fleet Air Arm. They will not be regarded as eligible to command seagoing ships. A limited number of executive Lieutenant-Commanders without previous experience of the Fleet Air Arm may be appointed for duty in F.A.A. bases. Such officers when they have gained experience may be considered for promotion to Commander (A), if they are above the zone for promotion on the executive list.

COMPLETION OF THE "ARK ROYAL."—The new aircraft-carrier "Ark Royal," Captain A. J. Power, C.V.O., was commissioned for acceptance trial at Birkenhead on 16th November, and arrived at Portsmouth on the 18th, where the flag of the Rear-Admiral, Aircraft-Carriers, was transferred to her from the "Courageous."

Among the air units in the "Ark Royal" are two new squadrons, No. 803 (Fighter) Squadron, formed at Worthy Down, under Lieutenant-Commander B. H. M. Kendall, and No. 814 (Torpedo Spotter Reconnaissance Squadron), formed at Southampton under Lieutenant-Commander N. S. Luard.

The flight deck of the "Ark Royal" extends over the full length of the ship, and is nearly 800 ft. overall, including the rounded portions which overhang the stem and stern of the hull.

RATING PILOTS.—Boards for the selection of candidates for Rating Pilot are in future to be convened in fleets and establishments by local authority as necessary. Names of recommended candidates are to be reported to the Commodore, R.N. Barracks, Portsmouth, who will maintain a central roster from which the final selection will be made. The age limits previously laid down, over 21 and not yet 24 years, are to be retained, and will be applicable both at the time of recommendation and of final selection. Air Gunners will be eligible so far as the drafting situation permits.

AIRCRAFT MAINTENANCE.—Two further specialized sections of the new branches for aircraft maintenance (see the November JOURNAL, page 871) have been formed to undertake appropriate work not requiring the attention of skilled artificers. They will deal with armament and electrical equipment, and will be known as (O) and (L) sections. The sections previously formed are (A), for the maintenance of airframes, and (E), for engines.

VACANCIES FOR WRITERS.—Large numbers of junior writer and supply ratings are required at an early date in connection with the transfer of the Fleet Air Arm to naval control. Entries at the March, July and November examinations are being increased. In order that time may be saved in the case of transfers from other branches, suitable candidates are to be given a month's trial in a ship or establishment under the supervision of an experienced Accountant Officer, and if recommended, to be transferred at once for three months' training, after which they will be considered as fit for draft.

FABRIC WORKERS.—An Order in Council published on 23rd December notified that the Admiralty consider it necessary to train naval ratings, other than those belonging to the sailmaker branch of the Royal Navy, as fabric workers to undertake duties connected with the fabric and canvas of aircraft. Non-substantive pay at the rate of sixpence a day is to be payable to ratings trained as fabric workers.

ADMINISTRATIVE DIVISION.—Approval has been given for the creation of a separate Port Division for Fleet Air Arm personnel at Lee-on-the-Solent to facilitate recruiting and drafting. It is understood that Rear-Admiral R. B. Davies, V.C., D.S.O., A.F.C., will be in command, with Captain T. O. Bulteel, R.N., as Chief of Staff.

ROYAL NAVAL VOLUNTEER RESERVE

NEW AIR BRANCH.—The creation of an Air Branch of the R.N.V.R. was officially announced on 18th November last. It will consist of officers only, graded as Pilots or Observers. Candidates must be between 17 and 23 years of age. Full-time training for 18 months must be undertaken. Pilots will receive instruction in flying aircraft from both ships and shore stations. Observers will be instructed in aerial navigation and other forms of naval air work.

After this full-time training, officers will be required to undergo periodical training for ten years—Pilots for a fortnight annually or a month bi-annually; Observers for 28 days annually, including 14 days' continuous training, the rest being performed in odd days and week-ends as convenient. After ten years, officers will no longer be required to keep in flying practice, but may volunteer for ground duties and training.

A gratuity of £150 is payable after the 18 months' initial training, and £25 a year

afterwards so long as officers maintain their annual training. Full pay and flying pay, at similar rates to those for the Air Branch of the Royal Navy, will be paid continuously during the full-time training and when officers are employed on periodical naval training or called out for service.

SUPPLEMENTARY RESERVE.—Recruitment for the R.N. Volunteer Supplementary Reserve, opened in 1936, has met with such response from yachtsmen and others with sea experience that the Admiralty has now found it necessary to fix a limit to the numbers to be entered at 2000. As, however, there will be very little wastage for another eight years from the Reserve, it is necessary to restrict the number entered each year in order that the establishment of 2000 may be reached gradually without stopping future recruiting altogether. The age limits have therefore been curtailed until further notice from 18 to 40 years to 18 to 25 years.

DOMINION NAVIES

ROYAL AUSTRALIAN NAVY

TRANSFER OF THE "HOBART."—H.M.A.S. "Hobart" (late "Apollo" in the Royal Navy), which left Portsmouth on 28th October, for Australia via the Suez Canal, arrived at Sydney on 21st December, after calling at Fremantle and Adelaide.

EXTENDED PROGRAMME.—Australia is contemplating the purchase of a battleship and the construction of a submarine flotilla as part of her enlarged defence programme. Admiralty advice is being sought on the most suitable site at Sydney for a dock and repair shops capable of refitting a battleship, on the assumption that ships of this type would be available for the defence of Australia in case of an emergency. It is also proposed to manufacture mines not only for the Royal Australian Navy, but for the Royal Navy in Eastern Pacific waters.

It has been decided to provide 55 Australian merchant ships with guns for defence against lightly armed vessels, at a cost of £50,000; 33 ships will have two guns each and the others one gun.

ROYAL CANADIAN NAVY

PROMOTIONS.—The following promotions have been made with effect from 1st December, 1938:—

Lieutenant-Commanders J. C. I. Edwards, F. L. Houghton and J. W. R. Roy to Commander.

Lieutenant-Commanders (E) J. G. Knowlton and W. W. Porteous to Commander (E).

Paymaster Lieutenant-Commander F. R. W. Nixon to Paymaster Commander.

TRAINING CRUISE.—The wooden schooner "Venture," built in 1937 for training purposes, arrived at Bermuda on 9th December.

NEW ZEALAND DIVISION, ROYAL NAVY

REFIT OF THE "ACHILLES."—The cruiser "Achilles" left Auckland on 2nd December for Portsmouth, to refit and recommission after serving for nearly three years in New Zealand.

COMMODORE COMMANDING.—Before the "Achilles" left, Captain J. W. Rivett-Carnac, D.S.C., commanding the "Leander," hoisted his broad pennant in that ship as Commodore Commanding the New Zealand Station in succession to

Commodore I. G. Glennie, who returned in the " Achilles " on the expiration of his service under the Dominion Government.

MARRIAGE ALLOWANCE.—A scheme of marriage allowances for officers has been introduced which conforms generally to that announced by the Admiralty in April last for the Royal Navy. The new conditions apply without option to officers loaned from the R.N. on or after 11th July, 1938.

ROYAL INDIAN NAVY

HEADQUARTERS TRANSFER.—The flag of the Flag Officer Commanding Royal Indian Navy was struck in H.M.I.S. " Clive " at sunset on 9th November, 1938, on transfer of the Naval Headquarters to Delhi.

CRUISE OF THE " INDUS."—H.M.I.S. " Indus " was to leave Calcutta early in January for a three months' cruise, visiting Rangoon, Nancowry, Port Blair, Stewart Sound, Calcutta, Akyab, Kyauk Pyu, Mergui, Car Nicobar and Trincomalee.

FOREIGN NAVIES

FRANCE

NEW BATTLESHIPS.—The floating of the " Richelieu " which was to have taken place in November last, was deferred and eventually took place on the 17th January. This has also delayed the laying down of the sister-ship " Clemenceau." The fourth ship of the class is to be named the " Gascogne."

AIRCRAFT CARRIERS.—The two new aircraft carriers are to be called " Joffre " and " Painlevé." The former was laid down by the Penhoet Company last November, and is due for completion in 1941. These ships will displace 18,000 tons, and it is reported that their designed speed will be 32 knots. According to *Jane's Fighting Ships*, the gun armament will probably be eight 5.1-in. A.A. guns.

CRUISERS.—The 1938 programme also makes provision for two more cruisers of the " De Grasse " class to be named the " Chateau Renault " and " Guichen." They will displace 8000 tons and have an armament of twelve 6-in., eight 3.5-in. A.A., and eight 13 mm. A.A. guns. They will also carry four aircraft. The designed speed is reported to be 34 knots. It is understood that these three ships will be of an improved " La Galissonnière " design.

SUBMARINES.—The three submarines of last year's programme are to be called " Martinique," " Guadaloupe " and " Réunion." They are of the " Morillot " class, and of 1605 tons surface and 2100 submerged displacement; they will carry one 3.9-in. and two 13-mm. A.A. guns, nine 21.7-in. and two 15.7-in. torpedo tubes; their designed surface speed is 23 knots; submerged—10 knots.

SLOOP MINESWEEPERS.—Four sloop minesweepers are included in the above programme.

NAVAL AIR SERVICE.—The French Naval Air Service appears still to be suffering from dual control, and repeated changes in the higher organization of the Air Force and its material. In a Press article, which is understood to be well informed, it is stated that the *Aeronautique Navale* has not kept pace with progress in the fleet, and the great proportion of its 550 aircraft at present available is out of date. Of this number there are barely 350 *appareils de combat*, and of these no more than 225 are fit for service. The Breguet-Pizerte-521 type of reconnaissance aircraft which were very satisfactory when they were originated in 1933, have been too long delayed

in construction. The same applies to the long distance reconnaissance seaplanes. The navy's bomber aircraft are of the Loire-Olivier-257 type, which are also out of date. The fighter aircraft are mainly of the Potez-453 and Loire-Nieuport-21 design; but the new Dewoitne-D.373 monoplanes having a speed of about 248 miles are beginning to enter the service.

FLAG APPOINTMENTS.—Vice-Admiral Gensoul assumed command of the Atlantic Squadron on the 1st September last. His flag is being carried by the "Dunkerque." Rear-Admiral Richard has been appointed to the command of the 3rd Light Squadron, his flag being flown in the contre-torpilleur "Maille-Breze."

GERMANY

INCREASE IN CRUISERS AND SUBMARINES.—Following on a notification from the German Government that they intended to exercise certain rights under the Anglo-German Naval Agreement, representatives of the British Admiralty flew to Berlin on 29th December and spent two days in consultation with the naval authorities there. It is understood that the intention is to build two more "A" class cruisers of 10,000 tons, bringing the total of these ships to five, and gradually to increase the submarine tonnage up to equality in that category with Great Britain.

The Agreement made provision for such increases "in specific circumstances," but they have to be offset by reductions of tonnage in other classes, so that the total ratio as between the two countries is not upset; this there should be no difficulty in arranging, as Germany has not yet built up to her quota in several categories. Even when she has built up to the total permissible extra tonnage in submarines, this would only be the equivalent of an extra battleship.

It is claimed that these increases have become necessary owing to the expansion of Russian naval forces, particularly in the Baltic, that the intention is purely defensive, and that Germany has, at present, no desire to build submarines up to full equality with Great Britain, although she is entitled to do so. The Nazi Press somewhat overdo their refutations of any suggestion that Germany might use her increased submarine strength in conjunction with Italy's great force of under-water craft to support the aspirations of the latter country in the Mediterranean. On the other hand, interest has been revived in the same Press in the use of submarines against enemy commerce.

Germany is a party to the Submarine Protocol which insists on the principle of visit and search, and steps to safeguard the lives of the passengers and crews of merchant ships before they are sunk. In view of her record in not adhering to agreements and treaties, it is quite obvious that we should be extremely foolish to rely on that Protocol being strictly interpreted by her in a future war.

CRUISERS.—The two new cruisers which are projected will presumably be of the "Hipper" class displacing 10,000 tons and carrying eight 8-in. and twelve 4.1-in. A.A. guns, and twelve 21-in. torpedo tubes; these ships will also have three aircraft, and the designed speed is 32 knots. The "Blücher" and "Hipper" are due to be completed in 1939 and the "Prinz Eugene" in 1940.

There are also four 7000-ton cruisers in the new building programme, the first of which—known as "M" and "N," were laid down in 1937 and 1938 respectively; the second pair are due to be begun early in the current year. These will presumably be improved "Nürnbergs."

NEW SUBMARINES.—So far Germany has confined herself to building comparatively small submarines, the largest being of 740 tons displacement. As the ratio quota is in tonnage, she has, by keeping displacement small, been able to provide

herself with all the larger number. It is understood, however, that she is now going to build submarines of 1000 tons or more.

ITALY

BATTLESHIPS.—The 35,000-ton battleships " Littorio " and " Vitorio Veneto " are due to be completed during the current year. The sister ships " Roma " and " Impero " were both laid down in 1938, the former at Trieste in September and the latter at Genoa in May. It is understood that all these ships will carry nine 15-in., twelve 6-in., and twelve 3.5-in. A.A. guns; the former are mounted in triple turrets, two forward and one aft. The armour belt is 9 to 12 in. thick. Each will also be equipped with four aircraft.

The modernization of the old battleships " Dorio " and " Duilio " on the same lines as that carried out in the two earlier ships of the class is well in hand.

TORPEDO CRAFT AND SUBMARINES.—In a statement on the Naval Estimates of last year, Admiral Ducci said that Italy's torpedo craft could compare with those of any other navy, and their total tonnage was on a par with that of France or with such strength in that class as Great Britain could afford to maintain in the Mediterranean. One hundred and five submarines might appear to be an enormous number, but, he added, " in war it would be impossible to keep more than one-third of them in commission owing to the need for refits and wastage among the crew." The Admiral also alluded to the difficulty of defending Italy's naval bases from air attack; she had not many spacious natural ports, and those which existed " had lost much of their value as a result of the changed political situation."

JAPAN

NEW CONSTRUCTION.—Four battleships are believed to be projected as part of the new construction programme and there are reports that two were laid down last year, but the Japanese still pursue their policy of extreme secrecy and no details are yet available for publication. The new Three-Power Agreement, however, gives Japan the moral right to build up to 45,000 tons displacement.

It is reported that five additional 7000-ton cruisers are under construction, but again no details are available.

EX-CHINESE SHIPS.—In connection with the recovery of the Chinese cruisers mentioned in these Notes for last quarter, it appears that the two ships which have been refloated and taken over by the Japanese are the " Ning Hai " and " Ping Hai." These are both fairly new vessels of 2500 tons, carry six 5.5-in. guns, one of which, the " Ning Hai " was originally built in Japan.

SOVIET UNION

NEW BATTLESHIPS.—There have been repeated reports that the Soviet Union are laying down 35,000-ton battleships, most of the material for which is being obtained from the United States; but these should be regarded with some reserve. It is known that there have been difficulties in the negotiations, and it still remains to be seen whether Russia, under the existing regime, has the facilities and technical experts for such large naval construction.

AIRCRAFT CARRIERS.—An old half-built cruiser laid down in 1914 has been converted to an aircraft carrier and named the " Stalin." She was launched last year. When completed, she will displace about 9000 tons and have a speed of 30 knots, and is reported to be able to carry 22 aircraft. Another carrier, to be

named the " Krasnoye Znamya " is to be laid down at Leningrad during the current year. According to *Jane's Fighting Ships*, she will be a vessel of 12,000 tons carrying 40 aircraft and twelve 4-in. guns, and have a speed of 30 knots. Another carrier is projected.

CRUISERS.—Two cruisers displacing approximately 8000 tons—the " Kirov " and " Maxim Gorki," are now completed, and two more—the " Kubyshov " and " Orjonikidze," are building. For some time it was believed that the first-named of these ships was laid down as long ago as 1913, but this appears to be incorrect. The first two are reported to have been started in 1934, and the other pair in 1935. They each carry six 7.1-in., four 4-in. A.A. and four 37 mm. A.A. guns, and six 21-in. torpedo tubes. They are also equipped with two or three aircraft.

Three cruisers of 8000 tons to carry nine 6-in. guns are believed to be projected.

PERSONNEL.—In the course of last year, there was a great " purging " of the Commanders-in-Chief and Chiefs-of-Staff of all the important commands, and the whole position of the officers of the Soviet navy has been systematically reduced while that of the political overseers has been greatly enhanced, with the result that there is now a system of dual command in which the professional expert has to defer all his orders to political ignoramuses. In fact, it is not too much to say that the whole service is now riddled with suspicion and espionage to such an extent that its fighting efficiency must be of a low order.

UNITED STATES

NAVAL POLICY.—The whole trend of American naval policy is towards a very considerable increase of the fleet to enable powerful forces to be maintained both in the Pacific and in the Atlantic—the former to counter any possible designs of Japan, and the latter to preserve the principles of the Munroe Doctrine against aggression by totalitarian countries in Europe.

The Washington correspondent of *The Times*, in his report on the 1st November last, stated that there is a strong possibility of provision being made for a powerful Atlantic fleet of twelve battleships, six aircraft carriers, seventeen heavy and eighteen light cruisers, seventy-seven destroyers, thirty-six submarines, and fifty auxiliaries.

In his annual report of the same date, the Secretary of the Navy urged that the personnel should be brought up to its full war strength; " In view of the present disturbed international conditions," he said, " all vessels should be given full complements so that the navy as a whole may be immediately available for emergency." At present submarines only are fully manned.

ATLANTIC SQUADRON.—The temporary Atlantic Squadron now consists of the following :—Battleships—" Arkansas," " New York," " Texas " and the demilitarized " Wyoming "; cruisers—seven ships of the " Brooklyn " (10,000-ton, 6-in. gun class), and three of the " Omaha " (7000-ton class); and twenty-two destroyers. It is expected that the aircraft carriers " Yorktown " and " Enterprise " will join this squadron.

BATTLESHIPS.—There are at present six battleships building and projected—the " North Carolina," " Washington," " Indiana," " Massachusets," " Alabama," and " South Dakota." These are all ships of 35,000 tons carrying nine 16-in., twelve 5-in., and eight 5-in. A.A. guns. It is believed that they have a 16-in. belt, 6-in. upper and 4-in. lower decks. They are also to be equipped to carry three aircraft. The main armament is disposed so that six guns can fire ahead and three astern. The 5-in. armament is all mounted in pairs in small turrets. No ships of greater dis-

placement have yet been laid down, and there is good reason to believe that the designs for them are not yet fully developed.

AIRCRAFT CARRIERS.—Three new carriers for replacements are building or projected. The first of these is to be called the " Hornet," but no further details are yet available. The 14,700-ton carrier " Wasp " is due to be completed early this year.

The big carriers " Lexington " and " Saratoga " are to be modernized at a cost of $7,500,000 each.

CRUISERS.—The last of the 10,000-ton 8-in. gun cruisers, the " Wichita," has now joined the fleet.

Of the 10,000-ton 6-in. gun cruisers, seven are complete, the remaining two—" St. Louis " and " Helena," have been delayed and will not be ready until 1940.

NAVAL AIR SERVICE.—The number of aircraft under naval control is being increased from 2050 to " not less than 3000." These include those embarked in the fleet, shore-based aircraft for coast defence, and long-range patrol flying boats. Provision is also made for a new naval airship.

According to *United States Air Service* a derigible of about 3,000,000 cubic feet is projected. This is larger than the " Los Angeles," but less than half the size of the ill-fated " Akron " and " Macon." It is understood that this airship is intended as an aeroplane carrier rather than for carrying out reconnaissance work herself.

ARMY NOTES

HIS MAJESTY THE KING

His Majesty the King has been pleased to approve of the following appointments :—

AIDES DE CAMP TO THE KING :—

Brigadier R. M. Wootten, M.C.
Colonel C. J. Wallace, D.S.O., O.B.E., M.C.
Brigadier F. H. Witts, D.S.O., M.C.
Brigadier J. A. Churchill, M.C.
Colonel *the Hon.* E. H. Wyndham, M.C.

COLONELS COMMANDANT AND COLONELS OF REGIMENTS.—Field-Marshal Sir Philip W. Chetwode, Bt., G.C.B., O.M., G.C.S.I., K.C.M.G., D.S.O., D.C.L., Colonel, The Royal Scots Greys and 8th King George V's Own Light Cavalry (Indian Army) to be Honorary Colonel, 2nd/10th Dragoons, Non-Permanent Active Militia of Canada.

Lieutenant-General Sir Maurice G. Taylor, K.C.B., C.M.G., D.S.O., to be Colonel Commandant, Corps of Royal Engineers.

General Sir Richard F. C. Foster, K.C.B., C.M.G., D.S.O., late Royal Marines, to be Colonel, The East Surrey Regiment.

A close friendship has existed between the Royal Marines and the East Surrey Regiment since 1825, when H.Q. and the right wing of the 1st Battalion, The East Surrey Regiment, embarked for foreign service in the " Kent " East Indiaman. The voyage was unfortunate and the vessel caught fire in a heavy gale in the Bay of Biscay. She finally blew up, but The East Surreys were rescued by another ship. On landing almost completely destitute at Chatham, the Regiment was taken care of and succoured by the Royal Marines.

Lieutenant-General Sir William M. Thomson, K.G.M.G., C.B., M.C., to be Colonel, The Seaforth Highlanders (Ross-Shire Buffs, The Duke of Albany's).

Major-General G. M. Lindsay, C.B., C.M.G., D.S.O., to be Colonel Commandant, Royal Tank Corps.

Lieutenant-General Sir Harold B. Fawcus, K.C.B., C.M.G., D.S.O., D.C.L., M.B., to be Colonel Commandant, Royal Army Medical Corps.

REPRESENTATIVE COLONELS COMMANDANT FOR 1939.—The following appointments of representative Colonels Commandant have been approved for the year 1939 :—

Major-General H. W. Newcome, C.B., C.M.G., D.S.O., Reserve of Officers, Colonel Commandant, Royal Artillery.

Major-General H. L. Pritchard, C.B., C.M.G., D.S.O., Reserve of Officers, Colonel Commandant, Royal Engineers.

Major-General E. A. Osborne, D.S.O., Colonel Commandant, Royal Corps of Signals.

General Sir Hugh J. Elles, K.C.B., K.C.M.G., K.C.V.O., D.S.O., Reserve of Officers, Colonel Commandant, Royal Tank Corps.

Major-General C. W. Macleod, C.B., C.M.G., D.S.O., Reserve of Officers, Colonel Commandant, Royal Army Service Corps.

Major-General H. Ensor, C.B., C.M.G., C.B.E., D.S.O., M.B., Reserve of Officers, Colonel Commandant, Royal Army Medical Corps.

Major-General J. Baker, C.B., C.B.E., Reserve of Officers, Colonel Commandant, Royal Army Ordnance Corps.

THE PRINCESS ROYAL.—H.R.H. the Princess Royal has been graciously pleased to accept Badge Number One of the Auxiliary Territorial Service. The badge is of silver and is a reproduction in miniature of the cap badge. It is intended to be worn with civilian dress.

Her Royal Highness has also accepted the post of Controller of the West Riding Women's Auxiliary Territorial Service—the headquarters of which will be at York.

THE KING OF ROUMANIA'S VISIT TO ALDERSHOT.—H.M. King Carol of Roumania, accompanied by the Crown Prince, visited Aldershot on Thursday, 17th November, 1938, and witnessed a display of mechanized equipment provided by troops of the Aldershot Command. On arrival, King Carol was received by Lieut.-General Sir John Dill, G.O.C.-in-Chief, who presented the following General officers to His Majesty :—

Major-General H. M. Wilson, G.O.C., 2nd Division.
Major-General C. N. F. Broad, Major-General i/c Administration.
Major-General *the Hon.* H. R. L. G. Alexander, G.O.C., 1st Division.

The following troops were drawn up in line in the Long Valley facing West : One squadron, 12th Royal Lancers ; 13th Anti-Tank Regiment, R.A. (less two Batteries) ; 24th Field Regiment, R.A. (less one Battery) ; One section 4th Medium Battery, R.A. ; One Company and Carrier Platoon, 1st Battalion, The Gordon Highlanders ; One Company 2nd Battalion, and One Company 4th Battalion, Royal Tank Corps ; Detachment, 6th Anti-Aircraft Regiment, R.A. ; and Search-light Detachment, 1st Anti-Aircraft Battalion, R.E.

After inspecting the parade and taking the Salute at the March Past, King Carol witnessed an advance by the Carrier Platoon of The Gordon Highlanders and a tactical demonstration by the two companies, Royal Tank Corps. His Majesty, who was accompanied throughout by General Lord Gort—Chief of the Imperial General Staff, displayed special interest in the armoured vehicles of the 12th Royal Lancers and the Carrier Platoon of The Gordon Highlanders.

APPOINTMENTS AND PROMOTIONS

The War Office has announced the following appointments and promotions :—

Lieutenant-General W. K. Venning, C.B., C.M.G., C.B.E., M.C., Colonel, The Duke of Cornwall's Light Infantry, to be Quartermaster-General to the Forces, with effect from 2nd February, 1939.

Lieutenant-General W. D. S. Brownrigg, C.B., D.S.O., to be Director-General of the Territorial Army, from August, 1939.

Lieutenant-General R. H. Haining, C.B., D.S.O., to be G.O.C.-in-C., Western Command, from August, 1939.

Major-General M. G. H. Barker, C.B., D.S.O., Colonel, The York and Lancaster Regiment, to be G.O.C. the British Forces in Palestine and Trans-Jordan, with the rank of Lieutenant-General, from August, 1939.

Major-General G. J. Giffard, C.B., D.S.O., to be Military Secretary to the Secretary of State for War, with the rank of Lieutenant-General, from August, 1939.

Colonel H. L. Ismay, C.B., D.S.O., Indian Army, to be Major-General (Local; substantive Colonel). Major-General Ismay is Secretary to the Committee of Imperial Defence.

Major-General L. V. Bond, C.B., to be G.O.C. Malaya, from August, 1939.

Major-General B. L. Montgomery, D.S.O., to be Commander, 3rd Division, from 1st December, 1939.

Brigadier R. P. Pakenham-Walsh, M.C., to be Commandant, School of Military Engineering (also Inspector of the Royal Engineers and Commander, Chatham Area and Depot Royal Engineers) with the rank of Major-General, from August, 1939.

Brigadier G. B. O. Taylor, C.B.E., to be Director of Fortifications and Works, the War Office, with the rank of Major-General, from 21st June, 1939.

Colonel H. C. B. Wemyss, D.S.O., M.C., to be Director of Recruiting and Organization, the War Office, with the rank of Major-General, from July, 1939.

Brigadier H. C. Harrison, D.S.O., to be Commander, 48th (South Midland) Division, T.A., with the rank of Major-General, from 1st June, 1939.

Brigadier G. Le Q. Martel, D.S.O., M.C., M.I.Mech.E., to be Commander, 50th (Northumbrian) Division, T.A., with the rank of Major-General, from 20th February, 1939.

Brigadier B. T. Wilson, D.S.O., to be Commander, 53rd (Welsh) Division, T.A., with the rank of Major-General, from 1st June, 1939.

Colonel M. F. Grove-White, D.S.O., O.B.E., to be Commander, 2nd Anti-Aircraft Division, T.A., with the rank of Major-General, from 29th May, 1939.

Major-General J. M. E. Harrison, C.B., D.S.O., to be Lieutenant-Governor and Commanding the Troops, Jersey District, from 29th May, 1939.

Brigadier A. N. Floyer-Acland, D.S.O., M.C., to be Commander, 43rd (Wessex) Division, T.A., with the rank of Major-General, from 13th December, 1938.

Major-General R. N. O'Connor, D.S.O., M.C., to be Commander, the 7th Division, from 29th September, 1938.

Mr. C. N. McLaren, A.R.T.C. (Glasgow), to be Director of Ordnance Factories.

Mr. McLaren served with His Majesty's Forces from April, 1918, to March, 1919, and was appointed Labour Superintendent of Royal Ordnance Factories on 1st November, 1935. Later he was appointed Assistant Director of Ordnance Factories and has been responsible for the planning of new engineering factories under the rearmament programme. Mr. McLaren is 40 years of age.

Director of Public Relations.—Major John Hay Beith, C.B.E., M.C., has been appointed to the vacant post of Director of Public Relations at the War Office with the honorary rank of Major-General. Major-General Beith has always taken a keen interest in Army life and under the pen-name of "Ian Hay," is well known as the author of many books dealing with the Army, including "The First Hundred Thousand," published in 1916. Educated at Fettes College and St. John's College, Cambridge, he served in The Argyll and Sutherland Highlanders during the War.

General

Recruiting for The Regular Army.—The various measures, which have been taken to improve conditions of service in the Regular Army, are beginning to show

results and have greatly stimulated recruiting. According to a statement made by the Secretary of State for War in the House of Commons on 30th November, 1938, the number of recruits finally approved from 1st January to 19th November, 1938, was 35,902 and for the corresponding period in 1937 was 23,413. There remained, however, much ground to make up and the deficiency was still over 21,000 men.

THE FOOT GUARDS.—There have been certain changes in the distribution of Guards Infantry Brigades. In future, the 4th Infantry Brigade (Guards) will consist of line battalions, while the Guards will form a new 7th Infantry Brigade forming part of the 3rd Division. The 1st Infantry Brigade (Guards) will form part of the 1st Division as heretofore.

THE ROLE OF INFANTRY.—General Lord Gort—Chief of the Imperial General Staff, speaking after the distribution of prizes to The Rangers, The King's Royal Rifle Corps, on 25th November, 1938, at their H.Q. in London, emphasized the part that infantry still played in the Army organization of all nations. Some critics, he said, sought to suggest that the days of infantry had passed, that they must give way to scientific progress and that, in future, infantry would be found only in some form of composite arm. However attractive this thesis might be, no General Staff had been able to accept it for the simple reason that it had not been borne out in the recent wars in Abyssinia, Spain and China, where the lion's share of the fighting had gone the way of the infantry. General Lord Gort speaks but rarely in public so his utterances should receive special attention.

THE ROLE OF THE FIELD FORCE.—Protagonists of the theory of limited liability in Continental warfare would do well to ponder over the words of General Sir Walter Kirke, Director-General of the T.A., speaking at Middlesbrough on 15th October, 1938. No one, he said, could exactly foresee what the task of our Field Force would be in any future war. One great service, however, which it could perform would be, in co-operation with our Allies, to prevent the Low Countries from being overrun and thus make it impossible for hostile aerodromes to be established on the Flanders Coast. Bombers unescorted by fighters were, he emphasized, highly vulnerable and though the range of bombers might be ever-increasing, that of fighters remained small and could only be increased at the expense of fighting efficiency. If an enemy could not establish his aerodromes close to our shores, the danger was immensely reduced, since his bombers must come unescorted, with the certainty of heavy casualties.

ARMY TACTICAL SCHOOL.—An Army Tactical School is to be established at which all Captains of combatant arms in the Regular Army, with not less than 12 years service, must qualify for promotion. Officers who have passed the Junior Wing of the Staff College, Camberley, will be exempt from attendance at the School. The objects of the School are :—

To disseminate and inculcate sound tactical principles, thus ensuring uniformity of method in their application throughout the Army.

To instruct officers how to teach.

To give them practice in the preparation and conduct of tactical exercises.

To test the fitness of individual officers for promotion to field rank.

When the Tactical School has been formed, the Senior Officers' School at Sheerness will be abolished.

OFFICERS' EMERGENCY RESERVE.—Twenty thousand applications have been received by the War Office for five thousand vacancies in the Officers' Emergency Reserve. This gratifying response will keep the department concerned busy for

weeks classifying and selecting the most suitable persons. Intending applicants are requested to withhold their applications until a further appeal is issued.

EMPLOYMENT BUREAU FOR RETIRED OFFICERS OF THE REGULAR ARMY.—The employment figures for retired officers of the Regular Army continue to progress satisfactorily: the summary for 1938 showed that 324 retired officers had been placed in employment during the year. Most of these placings are with Government Departments—especially under the Air Ministry. Details are as follows:—

Summary for Quarter ending 31st December, 1938.

Registration.	*During the Quarter.*	*For Year 1938*
British Service	75	272
Indian Army	62	206
	137	478
Found Employment by Bureau.		
British Service	28	111
Indian Army	18	63
	46	174
Found Employment other sources generally assisted by Bureau.		
British Service	20	118
Indian Army	4	32
	24	150
Personal Applications supported by Bureau	116	687

The address of the Bureau is Lion House, 72 Red Lion Street, High Holborn, London, W.C.1.

SCIENCE IN THE ARMY.—The "Science in the Army" Exhibition was opened by Mr. Hore-Belisha—Secretary of State for War, on 18th November, 1938, at the South Kensington Science Museum. "The soldier cannot live a day, move a yard or fire a shot without resort to the applied results of the workshop and the laboratory" said Mr. Hore-Belisha in his opening speech. He explained that the Army was to spend £3,000,000 this year on scientific research, development, testing, design and inspection.

Major-General Beith—Director of Public Relations, proposed a vote of thanks to the Chairman—Lord Nuffield, and pointed out that science had effected a revolution in the health of the Army. "Once, and not so long ago," he emphasized, "for every soldier who died of wounds a score used to die of diseases such as typhus, enteric, dysentry and the like. But now all that is swept away."

ANTI-TETANUS SERUM.—The fight against tetanus, which has been conducted in the laboratories of Army and civilian pathologists for years, has been brought to a successful conclusion. All ranks of the Regular Army are undergoing inoculation with a new serum, which is believed to afford lifelong immunity from infection by

the tetanus, or " lockjaw " germ. The new serum is known as " tetanus toxoid." The inoculation, which consists of two injections with an interval of several weeks between each, causes a minimum of inconvenience and does not incapacitate the soldier from performing his ordinary duties.

BARRACK CONSTRUCTION.—Great care is being taken in the construction of the new barracks, that are springing up on a large scale, not to interfere with the amenities of the countryside. Before work was started on the Royal Tank Corps barracks near Warminster, the advice was sought of both the Office of Works and the Fine Arts Commission. The result is the creation of a model garden city. The main barrack blocks are of the so-called " Sandhurst " type, which accommodate 360 men each, all of whom sleep, wash and dine on the premises.

MILITARY FUNERALS.—Because of the scarcity of horses, military funerals at Woolwich Barracks will, so far as is practicable, be carried out with the aid of mechanized vehicles. The gun-carriage in future will be drawn by a special motor-vehicle. The crew will consist of a driver and two attendants. If necessary, wreaths may be carried in another Army motor-vehicle, which will follow the gun-carriage at all funerals for which permission has been given by the garrison commandant.

TERRITORIAL ARMY

RECRUITING.—Recruiting for the Territorial Army has reached new high levels. The intake of 9606 recruits for November, 1938, brought the total strength on 1st December to 200,190 of all ranks, the highest figure ever achieved since the T.A. was reconstituted in 1921. A higher establishment of about 224,000 is now in view.

The T.A. to-day consists of eighteen Divisions, including one Mobile Division, three Motorized Divisions,[1] nine Divisions of all arms and five Anti-Aircraft Divisions; together with Coast Defence Troops and Army Troops. The strength of Divisions (all ranks) on 1st December, 1938, was :—

	Peace Establishment.	*Strength*	*Percentage of Strength to Establishment.*
55th (West Lancashire) Division	5503	5924	107.7
The London Division	5647	6019	106.6
51st (Highland) Division	8519	8578	100.7
49th (West Riding) Division ..	8483	8373	98.7
50th (Northumbrian) Division ..	5643	5560	98.5
48th (South Midland) Division ..	8482	8320	98.1
42nd (East Lancashire) Division..	8482	8199	96.7
53rd (Welsh) Division	8482	8175	96.4
54th (East Anglian) Division ..	8481	8071	95.2
52nd (Lowland) Division	8483	8036	94.7
44th (Home Counties) Division ..	8481	7991	94.2
43rd (Wessex) Division	8339	7850	94.1
The Mobile Division	6964	5629	80.8
Total, excluding A.A. Divisions ..	99989	96725	96.7

[1] It is understood that the 55th (West Lancashire) Division, The London Division and the 50th (Northumbrian) Division are to be motorized. Each Division will include six battalions of motorized infantry and one battalion of motor-cyclists, together with a complement of the ancillary arms.

	Peace Establishment.	Strength	Percentage of Strength to Establishment.
1st Anti-Aircraft Division ..	17021	16438	96.6
2nd Anti-Aircraft Division ..	20314	14619	72.0
3rd Anti-Aircraft Division ..	15469	8912	57.6
4th Anti-Aircraft Division ..	17170	11901	69.3
5th Anti-Aircraft Division ..	17431	14000	80.3
Total; 1st A.A. Corps	87405	65870	75.4
TOTAL T.A. DIVISIONS		162595	86.8

This table does not include Coast Defence Units or Army Troops.

ANTI-AIRCRAFT UNITS FOR NORTHERN IRELAND.—An Anti-Aircraft Brigade is to be raised for service in Northern Ireland. The Brigade will consist of approximately 160 officers and 4800 other ranks and will be distributed between Belfast, County Down, Londonderry, Ballymena and Lurgan. Brigade Headquarters will be in Belfast and R.A.O.C. Workshops at Holywood.

BALLOON BARRAGE FOR YORKSHIRE.—Three balloon barrage squadrons of the Auxiliary Air Force are to be formed in Yorkshire. The establishment of each squadron will be 7 officers and 250 men. The R.A.O.C. unit in Sheffield will be increased to a strength of 16 officers and 214 men.

LIGHT ANTI-AIRCRAFT UNITS, T.A. RESERVE

His Majesty has been graciously pleased to approve the formation of a T.A. Reserve (Royal Artillery Light Anti-Aircraft Units) for the defence of vital industrial establishments against attack by low-flying aircraft. This Reserve will be formed and administered in peace by T.A. Associations in consultation with industrial establishments concerned. The personnel will be recruited from the employees of these establishments and will be required to serve only in defence of the undertaking with which they are employed. They will continue in their ordinary employment except when actually required to man the guns. As they will continue to receive civilian pay, they will receive no allowances from Army Funds, either in peace *or war*, except during annual camp training or on courses of instruction. Officers will be given an outfit grant and other ranks certain articles of clothing. In order to utilize the services of men who are above the age for service in the the Territorial Army, the age limits for enlistment have been fixed at 38-50 years.

Obligations and Liability for Service.—In addition to attendance at camp and other training an officer, warrant officer, N.C.O. or man joining this part of the Reserve will undertake an obligation to be embodied at the same time as Anti-Aircraft units of the Territorial Army. When so called up, personnel will continue in their civilian employment and will carry out military duties as may be necessary.

Officers.—Minimum age for appointment is 38 years. Maximum age for appointment is 50 years, but in special cases the Army Council may approve appointment of candidates not below the age of 25 years. An officer will only be appointed if he is at least medically fit for home service and his character and qualifications are satisfactory.

Dress.—Officers will be required to provide themselves with Service Dress on the

following scale: 2 suits of canvas overalls; cap and badges; badges of rank; Sam Browne belt, and greatcoat.

Officers will be allowed on appointment, an outfit grant of £15.

Other Ranks.—Other ranks will be enlisted only for service with units which are responsible for defending against air attack the undertakings in which they are employed. The minimum age for enlistment is 38 years. Maximum age for enlistment is 50 years, but in special cases applications for enlistment of men not below the age of 25 years, may be submitted for War Office consideration. They will be required to be at least fit for home service, and will be medically examined. The term of enlistment will be 4 years. Re-engagements will be permitted for 1, 2, 3 or 4 years.

Dress.—Service Dress for other ranks will be provided by County Associations on the following scale: 2 suits of canvas overalls; greatcoat; cap and badges; badges of rank.

Drills.—Officers and other ranks will be required to attend a minimum of 30 drills a year and to attend annual training in camp for 8 days.

Pay and Allowances.—Officers and other ranks will receive pay and allowances at the same rates as allowed for corresponding ranks in the T.A., when attending courses of instruction or annual training in camp. No pay or other emoluments will be issued at any other time.

In the event of injuries, sickness or death attributable to military service, awards will be admissible under the same conditions as are applicable to personnel of the same rank on the Active List of the T.A.

Improved Conditions of Service for Officers.—Consequent on the improvement of conditions for commissioned service in the Regular Army, measures have been taken to benefit officers of the T.A.; also the normal tenure of T.A. appointments, such as command of units, will be reduced from four years to three. In exceptional cases, extensions of command will be permitted. The pay of junior Captains commissioned after 1st November, 1938, will be slightly reduced at first, but will automatically revert to the full amount as the officer becomes more senior. In the case of 2nd Lieutenants and Lieutenants, the pay will be increased. The new rates are :—

	Present Daily Rates.	*New Rates.*
2nd Lieutenant	10/–	11/–
Lieutenant	11/10	13/–
Captain	19/–	16/6 (19/– after 11 years total commissioned service in the T.A.).

Officers commissioned before 1st November, 1938, will be given the option of remaining on the existing rates or coming on to the new ones.

Staff Course.—Details of the scheme for opportunities for Territorial Army officers to be trained in staff duties are announced. Fifty Captains or Senior Lieutenants will be trained annually to fill staff appointments in the event of mobilization. The scheme has been evolved with due regard to the fact that Territorial Army Officers being mostly engaged in full-time civil occupations cannot easily take up residence at the Staff College. It has therefore been arranged to train these officers in the theoretical side of staff work in their own homes. Selected officers will be

sent over a period of nine months a series of lectures on subjects they are required to study. They will be set papers to write on the subjects they are studying, and will be given tactical and administrative problems to solve. The lectures, papers and problems will be prepared under the direction of the Commandant, Staff College, Camberley, thus ensuring that the same standard prevails both in the Regular and Territorial Armies. Correction and criticism of the papers, and the answering of any questions put by officers attending the course, will be carried out by the staffs of Commands.

There will be a second part consisting of a practical course lasting a fortnight, to be held at the Staff College during August of each year. On the conclusion of this, the officers attending will be placed as having qualified or otherwise. Officers who attend the course will count it as fulfilling their annual drills and camp attendance. Officers who complete the course satisfactorily will be excused the examinations for promotion to higher rank. They will be entitled to the distinguishing letters "t.s.c." after their names in the Army List corresponding with the distinction "p.s.c." which Regular Officers, who have passed the Staff College, have inserted in the Army List after their names.

Officers Training Corps and the Cadet Force.—The Secretary of State for War has announced the appointment of a Committee, under the chairmanship of Lord Strathcona and Mount Royal—Parliamentary Under-Secretary of State for War, to investigate the position, in the military organization, of the O.T.C. and the Cadet Force and to make recommendations. The members of the Committee are :—

Major-General M. G. H. Barker, Director of Recruiting and Organization.

Major-General Sir John Brown, Deputy Director-General of the T.A.

Mr. T. J. Cash, a Director of Finance, War Office.

Mr. H. H. Hardy, Headmaster of Shrewsbury School, representing the Headmasters' Conference.

Mr. E. G. Howarth, Deputy Secretary of the Board of Education.

Colonel A. I. Macdougall, Directorate of Military Training.

Mr. W. T. Marsh, Headmaster of St. Alban's School, representing the Incorporated Association of Headmasters.

T.A. Central Sports Fund.—A fund for encouraging sport throughout the T.A. has been started by the generosity of Viscount Nuffield, who has given £50,000. Hitherto the difficulty has always been to provide funds for holding competitions equally applicable to members of units scattered throughout England, Scotland and Wales. Major-General Sir Walter Kirke—Director-General of the Territorial Army, has explained that the Central Fund will allot grants to each branch of sport in proportion to the importance of each activity. Football, boxing and athletics will receive the largest shares. Each grant will be administered by a Sub-Committee of the Executive Committee, so as to equalize the benefit for all units taking part in competitions. A reserve fund is to be retained in the hands of the Executive Committee to meet unexpected contingencies and to provide, in the early stages, additional assistance to such sports as experience might show to require it. A portion of the grants will be utilized to enable the T.A. to enter representative teams to compete against the teams of the other Services. Hitherto this has been possible only in the case of boxing. The Executive Committee includes Sir William Eaton, Colonel J. K. Dunlop, Colonel C. F. H. Greenwood and Captain W. R. G. Smith. The fund is growing steadily and exceeds £75,000.

PALESTINE

The British Infantry have demonstrated in Palestine that their small-arms fire is as accurate as ever and have inflicted heavy punishment on the Arab terrorists. On 1st October, fighting at Ramallah resulted in some fifty Arabs being killed by British troops, who lost only one police officer killed and two other ranks wounded. The town, a Christian centre, had been occupied by the rebels who terrorized the population. Military police, supported by aircraft, inflicted twenty-seven casualties on an Arab band East of Haifa. On 10th October, the troops intercepted an Arab gang, who were attacking a Jewish settlement South of Beisan in the Jordan Valley, and killed eleven. Fighting with Arabs occurred at Nablus and near Walaja, one British soldier being killed. A brisk engagement took place on the Jerusalem–Hebron Road. There were five British and thirteen Arab casualties, while one machine of the R.A.F. was forced down.

On 17th October, the rebel Higher Command proclaimed that the Walled City of Jerusalem was under their control. Actually, the Moslem quarter and the Haram-esh-Sherif were largely dominated by the rebels, but the British police retained their grasp on the Citadel, the Jaffa and other gates and the Jewish and Christian quarters in the western and southern half of the city. This situation represented the high-water mark of the Arab rebellion and proved to be of short duration. On the following day, the High Commissioner authorized the appointment of Military Commanders to take over from the Civilian District Commissioners, named a Military Governor for Jerusalem and placed the whole of the Civil Police under military control. British troops encircled Jerusalem and imposed an eight-hour curfew. On 19th and 20th October, the 3rd Battalion Coldstream Guards,[1] supported by troops of the Royal Northumberland Fusiliers, combed out the Old City and re-established control. Nineteen Arabs were killed and twenty-five wounded. The Haram-esh-Sherif, which had been used as a refuge for armed Arabs, was surrounded, but—for religious reasons—was not entered at that time. The District Commissioner, at the invitation of the Moslem Supreme Council, later inspected the Haram. No armed men were found, but empty fired rounds of S.A.A. were discovered in the minarets of the Mosque.

Further fighting in the Nablus area resulted in the death of twenty-two Arabs while the R.A.F. engaged a band near El Kubeiba, killing eleven. On 27th October, British troops inflicted severe casualties on an Arab gang South of Miar. A well-known agitator was killed and the headquarters of the local rebel command were captured. On 9th November, an Arab rebel chief and eighteen of his men were killed in action near Tulkarm. Two British soldiers lost their lives. On 13th November, British troops re-occupied Jericho and conducted a house-to-house search.

The Secretary of State for the Colonies—Mr. Malcolm Macdonald, announced on 17th November that about 23,000 men (7300 Police, 700 R.A.F. and 15,000 Army) had been concentrated in Palestine from the United Kingdom, India, Egypt and Malta. During August, September and October, he said, 29 British, 144 Jews and 231 Arabs had been killed and 75 British, 232 Jews and 179 Arabs wounded; these figures did not include over 400 armed rebels who were known to have been killed in action up to 1st November. Although scattered Arab bands hiding in the hills might be expected to give further trouble, the back of the rebellion was broken and British authority generally re-established.

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[1] Students of warfare in its more unusual forms are advised to study the action of the 3rd Coldstream Guards in the recapture of Jerusalem. This operation is described in detail in *The Household Brigade Magazine*, Winter, 1938.

This auspicious result has not given satisfaction to certain sections of the Foreign Press—particularly in Germany—where slanderous allegations have been made against the conduct of British troops in Palestine. The latest statements, which allege atrocities such as gouging out the eyes of prisoners and burning them alive in a shed are emphatically denied by the War Office.

INDIA

APPOINTMENTS.—The following appointments have been approved by His Majesty the King :—

Colonel (temporary Brigadier) C. A. Bird, D.S.O., from Chief Engineer, Aldershot Command, to be Engineer-in-Chief, Army Headquarters, India, with the rank of Major-General, from 1st August, 1939.

Colonel W. P. J. Akerman, D.S.O., M.C., to be Major-General, Royal Artillery, Army Headquarters, India, with the rank of Major-General, from 7th November, 1939.

Colonel (temporary Brigadier) C. A. Heydeman, M.C., from Commander, 2nd Cavalry Brigade, to be Commander, Presidency and Assam District, India, with the rank of Major-General, from 1st August, 1939.

Colonel G. de C. Glover, D.S.O., M.C., to be Commander, Bombay District, India, with the rank of Major-General, from 1st August, 1939.

Brigadier C. D. Noyes, C.I.E., M.C., Indian Army, to be Major-General and Commander, Kohat District, India.

ANIMAL TRANSPORT.—The Commander-in-Chief in India—General Sir Robert Cassels, has decided not to push mechanization to extremes in the Army in India and to retain a proportion of animal transport. The strategical and tactical requirements of the Army are—to some extent—dictated by the type of country over which it may have to fight. The Northern and North-Western frontiers of India—the most likely theatres of war—are mountainous and broken to the highest degree. Columns, which wish to achieve full mobility, will have to cut loose from the roads and operate on an " all pack " basis. The maintenance of a proportion of camel, mule, and pony transport, therefore, is essential.

FEDERATED MALAY STATES

The ambition of the Rulers of the Federated Malay States to provide a regular regiment of their own race for the defence of Malaya has at last been realized. The Malay Regiment now consists of 700 trained and disciplined soldiers, led by selected British officers and has its own place in the British Army List. The bond between the Malay Regiment and the Lincolnshire Regiment must always be a close one since the latter supplied the new unit with its founder and first Commanding Officer (Lieut.-Colonel G. McI. S. Bruce) and several of the Company Officers.

The experiment of raising this battalion has proved so successful that it is to be extended. The Royal Engineers have decided to form a battalion of Malay Sappers, 900 strong, to assist in the defence of the fortress of Singapore.

FOREIGN

GERMANY

ARMY EXPANSION.—The German Army is beginning yet another period of expansion and the annual contingent of conscripts called up in October last was about 100,000 stronger than in the previous year. This figure does not include

Austrian or Sudeten-German conscripts. An annual contingent of 80,000 to 90,000 Austrians and about 30,000 to 40,000 Sudeten Germans may be estimated in addition to the figures for the Old Reich. Sudeten-German reservists, who have had a thorough training in the former Czech Army, number perhaps 350,000 men and will require only a few weeks training with German types of weapons to become fully efficient.

The peace strength of the active Army consists of 51 Divisions, including five tank, four light mechanized and three Mountain Divisions. An active Division may be reckoned at about 15,000 men and, in war, will be duplicated by the formation of a reserve Division. A further period of training will, however, be required before these arrangements can be considered as in anyway complete.

Four tank Divisions, each of two regiments of 200 tanks, are believed to be approaching their full establishment. The fifth is understood to be at present a nucleus only. Light Divisions consist of mechanized cavalry and include 100 light tanks each, as well as a strong complement of armoured cars and artillery.

The higher formations comprise 18 Army Corps—of which three appear to be in cadre form—organized in six Army Groups, with H.Q. at Berlin, Frankfort-on-Main, Dresden, Leipzig, Vienna and Hanover. The 17th and 18th Army Corps are stationed in Austria. General Guderian, Commander of the 16th Army Corps, has been appointed to the newly-created post of Officer Commanding the Light Troops. He is the leading authority in Germany on mechanization and has written books on the subject.

THE SIEGFRIED LINE.—The outline of the work on the German Western Defences, known as the Siegfried line, is reported to have been completed, though much more time will be required before all the details can be filled in. General Speich—Inspector-General of the Western Fortifications—stated that an enemy attempting a surprise invasion would come almost at once under the fire of a powerful artillery, while long range weapons, supported by aviation, would engage military targets in the enemy's rearward areas.

CHANGES IN HIGH COMMANDS.—On 31st October, the resignations of General Beck—Chief of the General Staff, and of General von Rundstedt—Commander of the First Army Group, were announced. General Beck is the third Chief of Staff to have laid down his high office lately, the two previous officers being General von Blomberg and General von Fritsch. General Keitel—Chief of the High Command has been promoted to Colonel-General, which is a rank intermediate between General and Field Marshal.

HUNGARY

ARMY ORGANIZATION.—Owing to the disintegration of Czechoslovakia and the revision of the Czecho–Hungarian boundary, the strength and efficiency of the Hungarian Army has become a matter of international importance. Based on a population of about 9,500,000, the males of which have been and are being subjected to full military conscription, the grand total of the armed forces that Hungary could put in the field during a prolonged war would amount to not less than 750,000 trained men. The peace strength of the Army is reported to be about 80,000; and the reserves are estimated to exceed half-a-million. The troops are organized in Mixed Brigades, Cavalry Regiments, Frontier Guards and Air Forces, and the pre-military training of the youth of the country is looked after by an organization known as the "Levente" which, according to reports, deals with from 500,000 to 600,000 youths. The Mixed Brigade, which is the highest formation in the Hungarian Army corresponds generally to a small Division and their Cavalry Regiments approxi-

mate to the Cavalry Brigades of other countries. It is, moreover, generally accepted that the organization of all formations is on a basis which will enable them to throw off two similar formations on mobilization. The organization by Mixed Brigades however, has not given universal satisfaction. Experiments are in progress to determine whether or not the standard European divisional organization would not prove more generally acceptable from a tactical point of view.

TRAINING AND EQUIPMENT.—Training follows the normal Continental system, beginning in October with recruits drill and winding up in the following Autumn with brigade (divisional) manœuvres, a system which demands very intensive work throughout the training period. The special features of last year's manœuvres emphasized the skilful bridging operations by the engineers—Hungary is a land of rivers—the hard marching qualities of the infantry, both regular and reservist and the high standard of the mounted troops. Whether the Higher Command, who are are responsible for the training, have fully appreciated the terrific fire-power of machine guns in defence is another matter. Many of the senior officers served only against Russian troops during the War and have not had an opportunity of experiencing the power of modern automatic weapons, well sited and served by skilled personnel. Perhaps as a result of this lack of experience, the Army, as a whole, is wedded to an immediate attack as the solution to each and every tactical problem. Insistence on the strategical and tactical offensive postulates a high morale in the attacking troops. The Hungarian soldiers, recruited almost entirely from the peasantry, possess great powers of endurance and are animated by a fierce longing to regain the lost territories and to liberate their countrymen from the foreign yoke. The fighting spirit of the troops is accordingly high.

The bulk of the war material, small arms ammunition, infantry guns, trench mortars and automatic A.A. weapons have been supplied by German munition factories. Local sources for the supply of munitions are but feeble. Broadly speaking, the standard of equipment of the Hungarian Army is low as compared with neighbouring armies ; reserves of war material are understood to be at a minimum. Little progress has been made towards mechanization. A mobile brigade, consisting of tanks, armoured cars and motorized infantry was tried out on recent exercises, but failed to achieve the results expected of it. The Hungarians are fine horsemen and command ample supplies of high-class animals. They prefer, therefore, to pin their faith on the horse and not to make themselves dependent upon imported supplies of lorries, oil and petrol.

AVIATION.—Aviation is still backward in Hungary, but local manufacturers are starting to construct aero-engines, which they fit to imported aeroplane bodies. Squadrons are composed of Italian and German machines, mainly Fiat, Caproni, Heinkel, Messerschmidt and Junkers. The Air Force is based on a " sports organization " which is energetically building up reserves of trained pilots.

RESOURCES.—Hungary is essentially an agricultural country and lacks adequate supplies of minerals. The greater part of the territory consists of " The Great Plain" or "Alföld," portions of which may be considered as amongst the most fertile in the world, producing grain of excellent quality, and supporting a number of horses, cattle and swine. The mountainous districts having been ceded to neighbouring States as a result of the Peace Treaty, Hungary has been deprived of the greater part of her forests and mines, which formerly contributed so largely to the national wealth. This loss tends to cripple the country's war potential and to make her largely dependent upon outside supplies. The standard 4 ft. 8.5 in. guage railway is in general use throughout Central Europe and links up Hungary with Germany, Austria, and Italy.

Hungary is not a rich country and experiences difficulty in financing her re-armament programme. The Government have lately launched a forty million pounds five-year re-armament plan, which they propose to sustain by a national loan, supplemented by a capital levy. Last year, over nine million pounds, representing nearly thirty per cent. of the total budget, were expended directly or indirectly, for defence purposes.

Hungary's difficulties with Czechoslovakia have now been cleared up but her problems with Roumania and Yugo-Slavia are still outstanding. With the march of events, German influence is making itself strongly felt in Government circles in Hungary but, nevertheless, is not regarded there with any illusions. The Hungarians, who are a proud and patriotic people, desire above all things to preserve their own culture and national independence. This feeling sets a definite limit to the influence which it is possible for any foreign country to exercise in that quarter. Nevertheless, Hungary wants her lost territories back again and might be prepared to go to great lengths in obtaining outside support if this would ensure the success of her policy.

UNITED STATES

Counter-battery work in the U.S. Army has taken a long stride forward with the development and production of the new 6 in. mobile field gun. This weapon fires a 95-lb. shell at a rate of one round a minute to a range of about 26,000 yards. The rubber-tyred carrier, on which the gun is transported, has ten wheels and is drawn by a semi-tracked vehicle with a road speed of ten miles an hour. The time required to come into action is said to be about forty-five minutes.

AIR NOTES

ROYAL AIR FORCE

Promotions

The following promotions were made with effect from the date shown :—

Air Vice-Marshal to be Air Marshal.—C. L. Courtney, C.B., C.B.E., D.S.O. (Acting Air Marshal), 1st January, 1939.

Air Commodores to be Air Vice-Marshals.—T. L. Leigh-Mallory, D.S.O., 1st November, 1938, R. H. Peck, O.B.E., P. Babington, M.C., A.F.C., 1st January, 1939.

Group Captains to be Air Commodores.—D. Harries, A.F.C., Sir Christopher J. Q. Brand, K.B.E., D.S.O., M.C., D.F.C., N. H. Bottomley, C.I.E., D.S.O., A.F.C., 1st November, 1938, G. C. Bailey, D.S.O., J. C. Russell, D.S.O., R. Graham, D.S.O., D.S.C., D.F.C., R. D. Oxland, O.B.E., 1st January, 1939.

Honours and Awards

The King has been graciously pleased to approve the following awards :—

Distinguished Flying Cross.—Flying Officer (Acting Flight Lieutenant) F. C. Hopcroft ; Flying Officers D. L. Amlot and N. A. N. Bray.

Air Force Cross.—Wing Commander H. K. Goods, D.S.O., D.F.C. ; Squadron Leaders R. O. Jones, G. R. Ashton, J. W. Gillan, J. F. X. McKenna, S. R. Ubee, G. Silyn-Roberts ; Flight Lieutenant W. D. Disbrey ; Flying Officer (Acting Flight Lieutenant) N. M. Hall, Flying Officer J. A. Kent ; Pilot Officer (now Flying Officer) G. F. Rodney ; Flight Lieutenant C. A. Pike, Reserve of Air Force Officers ; Flying Officer H. A. Durant, Royal Australian Air Force.

Appointments

The following appointments have taken effect from the dates shown :—

Air Vice-Marshal.—O. T. Boyd, O.B.E., M.C., A.F.C., as Air Officer Commanding Balloon Command, 7th November.

Air Commodores.—T. E. B. Howe, C.B.E., A.F.C., to No. 17 (Training) Group, in command, 13th November ; S. W. Smith, O.B.E., to No. 26 (Training) Group, in command, 7th November.

Royal Air Force Expansion

About four hundred Short Service Commission Pilots, who will be entered from civil life, are required within the next three months to complete the largest intake of Short Service officers for any year in the history of the Royal Air Force. In June last year, the Secretary of State for Air announced that owing to the further expansion of the Service some 1700 pilots would be required from civil life. Thirteen hundred candidates have been accepted up to date, and the remaining vacancies are now being filled.

The total acceptance of Pilots, Observers, airmen and boys since 1st April, 1938, is 22,940, as compared with 11,091 for the corresponding period, April to December, in 1937.

The accelerated expansion necessitates an immediate increase in the number of Air Observers for multi-seater aircraft, and the Air Council has decided, as a temporary measure, to recruit approximately fifteen hundred Air Observers direct from civil life during the next five to seven months. This number will be in addition to those already entered as a result of the recruiting appeal made by the Secretary of State last June. It has, at the same time, been decided to put Air Observers on an equal footing, both as regards pay and status, with airman Pilots.

Organization

New Formations.—The following were formed, or will form, on the dates shown :—

Balloon Command, in London—on 1st November, 1938, on which date it took over the administrative duties previously carried out by No. 30 (Balloon) Group.

No. 3 Balloon Centre, at Stanmore—on 15th December, 1938.

Station Headquarters, at Benson—on 1st February, 1939.

Station Headquarters, at Watton—on 4th January, 1939.

No. 3 Training Area, at Tern Hill—on 1st January, 1939, for subsequent transfer to Reading.

No. 33 Elementary and Reserve Flying Training School, at Whitchurch (Bristol)—on 1st December, 1938.

No. 8 Maintenance Unit, at Little Rissington—on 7th November, 1938.

No. 101 Maintenance Unit, at Tura, Middle East Command—on 10th October, 1938.

Equipment Training Schools at Cranwell and Kidbrooke—on 1st December, 1938.

No. 616 (South Yorkshire) (Fighter) Squadron, Auxiliary Air Force, at Doncaster—on 1st November, 1938.

No. 1 Ferry Pilots' Pool at Hucknall, and No. 2 Ferry Pilots' Pool at Filton—on 1st January, 1939.

No. 102 Maintenance Unit, at Abu Sueir, Middle East Command—on 1st January, 1939.

Transfers.—No. 16 (Reconnaissance) Group, from Lee-on-the-Solent to Chatham, with effect from 8th November, 1938.

Headquarters, No. 3 (Bomber) Area, Directorate of Works, from Lincoln to York, with effect from 8th November, 1938.

No. 16 (Reconnaissance) Group, from Lee-on-the-Solent to Donibristle, with effect from 1st November, 1938.

R.A.F. Station, Lympne, from Bomber Command to Training Command, with effect from 17th October, 1938.

No. 21 (Bomber) Squadron, from Eastchurch to Watton, with effect from 9th February, 1939.

No. 34 (Bomber) Squadron, from Upper Heyford to Watton, with effect from 9th February, 1939.

Change of Titles.—No. 6 (Auxiliary) Group will be known as No. 6 (Bomber) Group, with effect from 1st January, 1939.

The Home Aircraft Depot, Henlow, was renamed No. 13 Maintenance Unit on 1st November, 1938, and placed in the Maintenance Command on 1st January, 1939.

Personnel

Attachments of Foreign Officers for Courses.—Major A. D. Leite, Lieutenant M. P. M. de Barros, Lieutenant A. R. Costa, all of the Portuguese Air Force, to the Central Flying School, from 24th October.

General

Progress in De-icing Research.—Continuous research work on the problem of protecting aircraft from dangerous ice accretion in flight has been, and is being vigorously prosecuted by the Air Ministry. This is made clear in a pamphlet ("Ice Formation on Aircraft and its Prevention," H.M.S.O., 6d.), which has been published by the Air Ministry outlining the present position in this important sphere of research. The work includes wind tunnel and flight tests of several types of de-icing equipment. The two most promising devices—a mechanical and a fluid de-icer—are now undergoing trial on a number of modern service aircraft, including "Battles," "Wellesleys" and "Harrows." The equipment is thus being tested in a variety of wing sections and over a wide range of speeds.

The conclusions reached will be of special interest to air transport operators who are now required to have de-icing equipment fitted on their aircraft when conditions predisposing to ice formations are broadcast.

The practice of protecting the leading edges of wings and other vulnerable parts of an aircraft by covering them with a paste is regarded by the Ministry as a temporary expedient in its present stage of development. Only a limited quantity of active material can be applied to the surface and loss of this material must proceed as it fulfils its function. Similarly, when applied to airscrews, de-icing pastes have not so far provided wholly satisfactory results. Various tests, which were claimed to be effective, have been carried out on highly polished metal surfaces, but in none of these tests has this method been found effective. More hopeful results have been obtained in tests of a fluid and a mechanical de-icer, both of which, as already mentioned, are undergoing tests on aircraft. The latest tests of the former type show that when the fluid is properly distributed the method is effective. The principle involved in this method is the maintenance on the vulnerable part of a layer of fluid which lowers the freezing-point of water and so tends to prevent ice formation, or, if ice forms, the fluid, exuding below the ice, melts it and permits the air stream to detach the ice. The fluid tested is a mixture containing ethylene glycol, and is discharged under a porous outer covering of leather or gauze, a combination of the two, or rubber fabric. The use of the fluid de-icer has also been found to be effective on airscrews.

In the mechanical de-icer undergoing test, compressed air is used to pulsate through three rubber tubes, covered with a rubber "over-shoe," placed along the leading edge. An engine-driven pump maintains a cycle of alternate expansions and contractions in first the central and then the two outer of the three tubes. An aircraft was flown under very severe ice-forming conditions using this system, and the conclusion reached, in general, was that the tests appear to indicate that this system is satisfactory for wings and tail units.

Thermal de-icers by exhaust heating and by electrical resistance are noted as the subject of experiment abroad, but present constructional difficulties, and have so far not been tried in this country.

ROYAL AIR FORCE VOLUNTEER RESERVE

Three further Royal Air Force Volunteer Reserve training centres have recently been established at Belfast (Sydenham), Bristol (Whitchurch), and Southend-on-Sea, bring the total up to thirty-two.

Air Defence Cadet Movement

At a meeting held in furtherance of the new Air Defence Cadet movement last October, Sir Kingsley Wood, Secretary of State for Air, said that in the Royal Air Force aided by the Auxiliary Air Force and the Royal Air Force Volunteer Reserve, we possessed defence forces of which we were rightly proud and which it was our duty constantly to strengthen both in numbers and equipment. There was also the new Civil Air Guard, which had met with such an immediate and enthusiastic response, but until recently there had been no Air Cadet organization—a defect which this new movement was designed to remedy. It would be a most valuable adjunct in many ways. It gave youths between the ages of fourteen and eighteen opportunities for technical ground training and direct contact with aviation; it would give increasing help to civil aviation by making the youths air-minded in the best sense of the word; and, further, he hoped it would ensure a steady flow into the Royal Air Force and the Auxiliary Air Force.

The Air Defence Cadet Corps, like the Sea Cadets, was a voluntary movement organized by local committees under the guidance of the Air League of the British Empire who were the originators and sponsors of the scheme, and the Air Ministry had given the Corps official recognition, financial support and the issue of certain equipment.

OVERSEAS COMMANDS

Flights

Record Long Range Flight.—The Royal Air Force Long Range Flight consisting of three "Wellesley" aeroplanes left Ismailia at 3.55 a.m. G.M.T. on 5th November, 1938, for Darwin in an attempt to beat the world's long-distance record of 6306 miles held by the Soviet Union. Conditions for the take-off were good with a light breeze of 5 m.p.h. blowing slightly across the prepared runway. The aircraft took off individually and no difficulty was experienced by any of the machines in either take-off or climb. The average run was about 1200 yards, with an all-up weight of 18,400 lbs.

The Flight turned straight on to its course and climbed to 10,000 feet, which was reached about forty-five minutes after the take-off and was maintained throughout the flight. It had been hoped to obtain a following wind of useful strength as far as India, after which the prospects indicated light adverse winds until the Australian end of the route was reached. As it turned out, little or no help was obtained from the wind for the first twelve hours, and adverse winds were experienced for the rest of the journey. Over Arabia, unusually cloudy conditions were met with and the bumps were unpleasant owing to the heavy loads.

The Persian Gulf was reached after about six hours flying, and darkness fell after the aircraft had been ten hours in the air. After passing Jask, the moon gave sufficient light for the Indian coast to be picked up after fourteen hours flying. Very little was seen of India owing to cloud, and the course was maintained by celestial navigation. The east coast of India was reached at dawn on 6th November after nineteen and a half hours flying, covering a distance of 3300 miles.

The weather began to deteriorate over the Bay of Bengal with head winds and occasional thunder storms. The Andaman Islands were next picked up and the flight continued to the coast of Siam which was reached after twenty-eight and a half hours in the air. Soon after crossing the Malay Peninsula, the second night fell, a distance of 5000 miles having then been covered. The position of the Anambas Islands was observed by lights picked up half-way across the South China Sea.

For the next twelve hundred miles flying conditions were exceedingly bad; cloud, heavy rain and lightning were continuous, rendering wireless inoperative and navigation possible only by dead reckoning. At dawn on the third day, 7th November, the aircraft were approaching Macassar at the southern end of the Island of Celebes, and were within sight of breaking the record held by the Russians.

On reaching Lomblen Island in the Dutch East Indies, it was realized that No. 2 aircraft might not have a sufficient supply of petrol to cross the Timor Sea and to reach Darwin with an adequate margin of safety. A precautionary landing was therefore made at Kupang by this aircraft and the other two "Wellesleys" continued their flight to Darwin, where they landed at 4 a.m. G.M.T. on the 7th November, after just over forty-eight hours in the air. No. 2 aircraft, after refuelling at Kupang, arrived at Darwin a few hours later. The engines and aircraft behaved faultlessly throughout the flight, and the crews arrived quite fresh at Darwin.

The distance flown was 7162 miles, thus beating the previous record by 856 miles.

ADEN

UNREST IN SUBEIHI COUNTRY.—As anticipated in the last Notes, the operations against the Mansuris were brought to a successful conclusion on the 4th September, all the sub-sections in the Wadi Ma'adin being summoned to a meeting at which they presented a written request that peace, law and order be established in their country. The first political officer reported that the desire for peace was most marked over all Subeihi country, and the only opposition he encountered was from wrong-doers who were afraid to face judgment. The firm action taken against the Mansuris has restored the tribe's confidence in the Government as they now feel that if they enter into agreements to keep the peace, these agreements will be enforced. It has been found possible to obtain signatures to seven separate three-year truces covering the whole of South-West Subeihi country.

INDIA

WAZIRISTAN.—The general tribal situation in Waziristan showed little change during the period covered by these Notes, though with the onset of winter conditions, hostile activity was confined to offensives of a guerilla nature such as sniping, looting, etc. Raiding and kidnapping offences continued unabated during September and October, several raids on villages in administered territory taking place.

The Fakir of Ipi remains the chief source of unrest and air action has been taken against the various tribes found guilty of harbouring him. At the end of November, his reported location was at Dwa Toi, only half a mile from the Durand Line, and at that time air action against the Madda Khel tribe was in suspense pending the consideration by the Fakir of the Government's peace terms and offer of a free pardon, announced on the 7th October, and the approaches made to him by the Afghan Government.

The latest position is that there are still no signs that the Fakir is desirous of availing himself of the Government offer.

PALESTINE

ROYAL AIR FORCE CO-OPERATION.—The Royal Air Force continues to co-operate with the military forces in Palestine in their task of upholding the authority of the Government and stamping out terrorism. The work includes close co-operation with the Army and Police in searches of villages and areas where rebels are suspected to be in hiding, escorting military and civil convoys, reporting cases of sabotage on roads and railways, the prevention of arms smuggling and the relief of ambushed convoys. The month of October saw the Royal Air Force in Palestine more extensively engaged than during any previous period in the present disturbances.

FOREIGN

CZECHOSLOVAKIA

AIR FORCE.—The following are extracts from an Italian Press article which was headed, " Czechoslovakia, Europe's ' Aircraft Carrier.' "

" The first-line strength of the Czechoslovak air force was stated to be as follows on 1st January, 1938 :—

Four squadrons of Day Bombers, each of ten aircraft.
Four squadrons of Night Bombers, each of six aircraft.
Sixteen squadrons of Fighters, each of twelve aircraft.
Twenty Reconnaissance squadrons, each of twelve aircraft.

Giving a total of 456 aircraft in 44 squadrons.

In addition to the above aircraft there are six additional squadrons (training squadrons equipped with aircraft similar to those in use with the first-line formations) with a total of one hundred aircraft, and also a reserve of fifty per cent. of the peace strength. Czechoslovakia, therefore, must be considered a secondary air Power both with regard to the strength of her air force and her comparatively low proportion of bombing aircraft.

The Czechoslovak air force's proportion of bombing aircraft amounts to only fourteen per cent. as compared with the forty to seventy per cent. in the case of the great air Powers. Under the present rearmament programme, the existing forty-four squadrons are to be increased to sixty-three for 1939-40.

The air force with its excellent organization, its first-grade flying equipment, and its limited aircraft, has its chief value in co-operation with the army for defence.

Czechoslovakia should only require a small number of aerodromes. However, according to official data, the country actually possesses one hundred and twenty, and thus has at her disposal a number of air bases which greatly exceeds the requirements of the use of her own air force. In these circumstances, the assumption is justified that the ground organization is actually destined for the operative use of the air forces of other countries. This is the reason that Czechoslovakia has been given the name of ' The Aircraft Carrier of Europe.' "

The article must be considered in the light of propaganda, and the statement concerning aerodromes is certainly exaggerated, but the opinions are of interest as they indicate to some extent the Italian attitude towards Czechoslovakia, and give information about the air force itself.

DENMARK

EXPANSION OF AIR SERVICE.—As a result of the Czechoslovakian crisis, the Danish naval and military air Services are to be improved. The monies for defence

services intended to be spread over the next five years is now to be made immediately available for the strengthening of the fighting services.

No great advance has been made in the air services during 1938, but a substantial naval order has been placed with the Fairey Aviation Company for torpedo aircraft.

FRANCE

ORGANIZATION OF THE AIR FORCE.—General Armengaud, writing in the *Revue Militaire Générale*, reviews the vital needs of the French air force and gives his opinion that that service is inferior to the army and navy. This inferiority, he adds, is not due to the lack of technical knowledge but to a slow aeronautical industry, and he considers that the fifteen hundred aircraft provided by the naval programme should be increased to three thousand.

When the Independent Air Force was formed, it absorbed the army and navy air forces with the object of providing a unified air service. In 1932 the auxiliary air force was returned to the navy, but the administration of the force remained with the Air Ministry; this led to frequent disagreements with the Navy Ministry and, as a result, the naval air service was little improved. Conditions have since been bettered by the substitution of naval personnel within the appropriate branch, although air instruction and equipment are still controlled by the Air Ministry. General Armengaud suggests a similar system for the army air force, thus leaving the Independent Air Force for special mass duties, such as bombing and patrol.

Since this article was published, steps have been taken to provide for a first-line strength of 2600 machines by April, 1940, with a corresponding increase in reserves.

In November, an article appeared in the French Press dealing with the existing condition of the *Aéronautique Navale*. In it the writer declares that the air branch has not followed the progress in the fleet, and that the bulk of the aircraft available is out of date. The number of machines is given as 550, and of these, there are barely 350 *appareils de combat*; even of this number no more than 225 aircraft are available for service and are mainly composed of out-of-date types. The article goes on to mention in detail the types of machines available, and the writer, like General Armengaud, lays the blame on the slow rate of production in the aircraft industry.

AERO-ENGINES.—It is reported that a company has been formed to construct Bristol "Hercules" sleeve-valve engines under license at Venissieux, Lyons. It is, however, not anticipated that completely French engines can be turned out in less than eighteen months, although, provided that certain parts can be obtained from England, it might be possible to produce engines before the end of 1939.

Negotiations have taken place with a view to the possibility of obtaining Rolls-Royce liquid-cooled aero-engines from England. It was admitted that in France the manufacture of aero-engines, especially liquid-cooled, could not keep pace with the output of airframes. The requirement is considered to be one hundred Rolls-Royce engines a month, delivery starting in April or May, 1939. It is possible that later the Air Ministry might want to acquire the right to manufacture these aero-engines under license, but as the fitting out of a factory would take quite eighteen months, this could not satisfy their immediate requirements.

TRAINING OF PILOTS.—In order to increase the output of pilots for the Air Force, the *Ecole de l'Air* has duplicated the flying school of Cadet Officers at Avord by a second school at Romilly, which started working three months ago, and is taking over five finishing schools from *Aviation Populaire*. These schools will be

for men who have been taken on for the normal two years conscription or who have signed on for longer periods, and will be affiliated to the *ab initio* flying training school for non-commissioned officers at Istres.

PASSIVE DEFENCE IN PARIS.—It is reported that arrangements for the dimming of street lights, for camouflage and for the installation of air-raid services have been completed; medical shelters are under construction and two large shelters have been completed. A thousand cellars have been strengthened with props and a second thousand are to be similarly treated; tens of kilometres of trenches are to be dug and the strength of the fire brigade is to be increased to six thousand. In order that it may be made available as an underground shelter, the curtailment of the Paris Underground Railway is envisaged; in war time it would be only eighty kilometres in length and have only sixty-two stations. A programme for the fitting out of decontamination posts has been put into execution.

FRENCH PETROL SUPPLY.—It is reported that the French are uneasy about supplies of petrol in the event of war, and that they realize they are not very much better placed than are Germany and Italy.

In 1937, only 72,000 tons of raw petrol, or less than one per cent. of French requirements were produced in French territory. The Pechelbronn supply would be useless in war, being too near the frontier, and the Moroccan supply averages 6000 tons a year. Rather more than half of France's petrol requirements and one-seventh of its carburants come from Irak, the remainder from U.S.A., Venezuela, Roumania, Soviet Union, etc., so that she is dependent in war on sea transport. At a cost of sixteen million francs a year France maintains a fleet of tankers of 450,000 tonnage, while the German tanker tonnage only totals 190,000.

Between 1929 and 1932, twelve refineries were built in the country, with a capacity of between six and seven million tons a year, making France practically independent of foreign supplies so far as the refined product is concerned. Importers have to keep a reserve equivalent to forty per cent. of their annual sales and of this, fifteen per cent. must be stored in bombproof constructions.

As regards petrol substitutes manufactured by the hydrogenation of coal, the Bethune works produced 2573 tons in 1937, and 4146 in the first six months of 1938; and the Lievin plant in the same periods, 3548 and 5440 tons respectively at a cost of Frs. 6500 a ton. The construction of three new plants to produce 180,000 tons of synthetic petrol is, it is reported, under consideration, but funds have not yet been made available.

GERMANY

OCCUPATION OF SUDETEN GERMANY.—The German wireless recently transmitted a programme during which the use of the army and air force during the September crisis and in the occupation of the Sudeten German territory was discussed. The five hundred aircraft which took part in the occupation were said to be only a fraction of the number which were held in readiness to be used immediately if complications had ensued. The broadcast told of the disposition of many thousands of anti-aircraft guns to protect the home territory in addition to hundreds of anti-aircraft batteries with thousands of guns of all calibres in the area round Czechoslovakia to form an effective first defence ring.

NEW AIRSHIP.—The United States Government has finally refused to supply helium for the new derigible L.Z.130, and the airship's trial flights are being made with hydrogen as the lifting medium. It was hydrogen that caused the disaster to the Hindenburg at Lakehurst, U.S.A., in 1937, but the danger has now been mini-

mized. A means has been invented, according to the claim, of saving the water content of expended fuel. In this way, the necessary extra ballast is provided which, if occasion demands, can be released to maintain the requisite buoyancy of the airship, instead of having to allow free hydrogen to escape. Meanwhile, one of the leading German chemical companies is engaged in inventing the production by synthetic process of a non-inflammable gas which will solve all difficulties.

ITALY

NEW AIR BASE.—The air base at Aspretto, in Ajaccio-Corsica, which has been under construction since 1932, has been completed, and is furnished with all the latest equipment. The aerodrome can accommodate from two to four squadrons, depending on the type of aircraft, and there are quarters for twenty officers and four hundred other ranks.

REVIEWS OF BOOKS

GENERAL

Elizabethan England. By E. M. Tenison. Vol. VI: 1585–1587.[1] (Issued to subscribers only).

" There is not any governed Estate which in peace or war can be accounted sure, or preserved from dishonour and ruin, unless it be supported and borne up by justice duly administered, and discipline orderly observed." So wrote Queen Elizabeth's General, Robert Earl of Leicester, introducing his excellent *Lawes and Ordinances of War* now brought out of oblivion by Tenison. This Volume VI of *Elizabethan England* is from a military standpoint yet more remarkable than the earlier volumes. That though Queen Elizabeth had a Navy she had no Army worth mentioning is a fallacy on which we have all been educated. Even Sir John Fortescue accepted that pronouncement of historians; not realizing that they had passed judgment without ascertaining of who and what the Army was composed. From Leicester's Laws of War, from the Commissions, *The Pathway to Military Practise* (a handbook issued in 1587), from the despatches, and from contemporary maps and plans, and most of all from the discovery of the Muster Rolls, Tenison has shown the quality of our Army, and has elucidated the war in the Netherlands.

The deeds of the Elizabethan fighting Services are not now at the mercy of any retrospective rhetoric: all the events, demonstrated direct from the evidence, are so clear that the delusion as to the Elizabethan army having been composed of " scum and gaolbirds " is dispelled for ever. The Muster Roll of the Earl of Essex's Cavalry, all " voluntaries " and all gentlemen, is one of the most interesting revelations. It is pointed out that although there is a wealth of evidence available in this connection, the word " cavalry " does not occur at all in the index to the printed Calendar of State Papers Foreign. An Addenda index is therefore furnished by Tenison for the aid of students.

It is shown how criticisms in the XIXth and XXth Centuries against Leicester's generalship have arisen from hasty misreading of unreliable matter. The Cavalry charge at Zutphen, called " mad " in 1898 by a naval historian, has been dubbed " mad " ever since. But we are now shown first what actually happened; and then given an analysis of the process by which a notably gallant exploit has been inverted into a defeat. Essex, General of the Horse, is shown as seen by his contemporaries. The disgraceful surrender of Deventer by Sir William Stanley is examined; as also Van Hemert's betrayal of Grave. This historian does not write to a preconceived thesis; but to excavate the facts, good or evil. The presentation of the evidence is so skilful that what has taken half a lifetime to collect and classify can be assimilated without fatigue or confusion.

The tragedy of Mary Queen of Scots has not till now been brought into juxtaposition with the European military history of her time. Francis Duke of Guise (who beat the English out of Calais), said of Mary (his niece) that had she been a

[1] This is another volume of the series generously presented to the Institution by Mr. J. F. Ruthven, who has written this review.

man she would have made an excellent soldier. In this Volume VI, that Queen appears in a very different aspect from the amorous and foolish " Mary Stuart " of modern impressionism. Incidentally, we see Mary recognizing the doings of Drake afloat and Leicester ashore in 1586 as all part of the same campaign. Drake was no more a pirate than Leicester was a highwayman, for Drake's Commission was as definitely from the Crown as Leicester's.

In this volume of nearly 500 pages the wealth of detail never obscures the main issues. To describe it is not possible, for no work thus co-ordinating the Elizabethan Navy, Army, politics, and the fine arts has been achieved before. The combination of judicial exactitude with dramatic effect, the marshalling of each eminent personage in his own words, bring home to us that what we call " Shakespearian eloquence " was the everyday English of our ancestors.

Brest-Litovsk. The Forgotten Peace. By John W. Wheeler-Bennett. (Macmillan & Co.). 21s.

The Treaty of Brest-Litovsk which determined the conditions of peace between Imperial Germany and Bolshevik Russia was signed in March, 1918. At that moment the military interest of the War centred on the Western Front. This, and the fact that the settlement of Brest-Litovsk was subsequently annulled by the Treaty of Versailles, probably supply the reason why so little attention has been paid to the earlier treaty on the Allied side. The Germans have paid considerably more attention to it—we are all apt to dwell more on our successes than on our failures—and, at a moment when the project for a greater Ukraine is once more coming to the fore, there is something curiously topical about these events of twenty-one years ago.

At Brest-Litovsk we see the term " self-determination " being used by the Germans in exactly the same way as it is to-day. The Russia of 1918 was also no less enigmatic than the Russia of 1938. Of particular interest, too, is the part played by Brest-Litovsk in binding the United States more closely to the Allies and the effect of this in hastening the final victory. The effect from the purely military point of view was no less significant. "A million troops immobilized in the East was the price of German aggrandizement, and half that number might well have turned the scale in the early stages of the battle of giants which was raging in the West. According to both Sir Douglas Haig and General Mangin, only a few cavalry divisions were necessary in March and April, 1918, to widen the gap between the French and British, thus severing the two armies. These were not available on the Western Front, but at that moment three cavalry divisions were propping up successive puppet governments in Kiev."

Mr. Wheeler-Bennett has skilfully unravelled the tangled skein of the negotiations, the moves and counter-moves that led up to the treaty, and given us an extremely readable book. Not the least interesting part is the series of pen-pictures of the leading personalities on both sides, most of whom the author has met personally. In one case—that of Trotsky—this involved a journey as far afield as Mexico. The book is published as one of a series of " Studies in Modern History," under the general editorship of Professor L. B. Namier of Manchester University. This is how history should be written.

Fighting Fools. By James E. Edmonds. (Century Company, New York). $2.50.

The author of this book is a Brigadier-General in the National Guard of the United States. His practical knowledge and his extensive studies have combined

to produce an arresting and challenging book. His main thesis can be given in his own words as follows: "The American people's far-flung possessions . . . and their tremendous structure of wealth at home, were builded upon one hundred and twenty-two years of aggressive expansion." Put in simpler terms, the book might be described as an attempt to "debunk" American history. Many of the facts that he adduces are common knowledge to most English historical students, but until recently they have been as a closed book to the average citizen of the United States. Thanks, however, to such liberal historians of our own generation as Professor Randall and J. T. Adams, the American public is gradually becoming disabused of many of its cherished beliefs. This book will undoubtedly hasten the process—if it does not cause a reaction by over-statement; for General Edmonds was for a long time a journalist by trade and his journalistic style may somewhat antagonize English readers.

NAVAL

History of the Great War: Naval Operations, Vol. I, 2nd Edition. By Sir Julian Corbett. (Longman, Green & Co.). Text, 21s. Maps, 10s. 6d.

Eighteen years have passed since the Historical Section of the Committee of Imperial Defence produced the first editions of this volume, and it is not always fully appreciated that this was the first occasion on which an official naval history had appeared and the first occasion on which the historian had been given access to all the relevant official documents. Nor is it generally appreciated what this implied. Scores of thousands of documents had to be arranged, and behind the history lies a formidable piece of archival work admirably performed by the late Mr. Henry Leveson and Instructor Captain Oswald Tuck, R.N. This task was only possible with the willing co-operation of the Admiralty, and the two thousand volumes of Admiralty records of the War all bound and indexed remains as by no means the least important part of Sir Julian Corbett's work.

Corbett's first volume took us up to the Battle of the Falklands on 8th December, 1914. One of the most important preludes to the War consisted in the preparation of the "War Book." This was a great work; but cribbed and confined by financial considerations, it was limited largely to measures of administration. It ensured the clockwork mobilization of the fleet, but when the Grand Fleet entered Scapa Flow, the Commander-in-Chief found an anchorage without defence of any kind, and months of anxiety had to elapse before this shortcoming was even partially remedied.

The naval plan of war was only issued in 1914. Up to 1912 the plan had been based on the idea of an encirclement or blockade of the Bight. This was what the German Staff expected and for which it was prepared. But in 1914 when Mr. Churchill was First Lord and Prince Louis (later the Marquis of Milford Haven) was First Sea Lord, the plan was changed to one of distant observation—much to the derangement of the German plan which was based on the idea of gradually gaining an approximate equality of strength (*Kräfteausgleich*) by continuous guerilla attacks on the British Fleet in the vicinity of the Bight.

When Sir Julian Corbett wrote his first volume, the German Official History had not appeared and the account of the action in Heligoland Bight (28th August, 1917) has now received considerable revision in the light of German information. There is a tendency by some to undervalue this action. Fought on a misty day, possibly its material results were not very great though by no means negligible, for the Germans lost three of their best light cruisers with 702 killed. It had, however, very important

consequences, for Beatty's entry into the Bight confirmed the Kaiser in a determination to confine the German Fleet to a strictly defensive policy, produced a great cleavage of opinion in the German Navy, and led to a complete estrangement between the Kaiser and Admiral of the Fleet, Von Tirpitz. The wisdom of Jellicoe's decision to send Beatty and Goodenough to support the Harwich forces was splendidly justified; had he not done so, 28th August might have been a very different day and resulted in a different German policy.

The new edition also contains a large revision in the account of the cruise of the German minelayer "Berlin," which left the Bight on 16th October, 1914, and on 23rd October laid a large minefield off the North of Ireland which led to the loss of the battleship "Audacious" on 27th October, and was also responsible for the loss with all hands of the armed merchant cruiser H.M.S. "Viknor" in January of 1915. The German Official History has also provided some important additions to the account of the escape of the "Goeben" and "Breslau" on 6th August, 1914, from Messina to the Dardanelles.

Though the new editions may appear at first sight to consist only of additions and amendments to the original work, it is apparent that these are based on long and careful research. The book is re-issued under the name of Sir Julian Corbett, but Colonel E. Y. Daniel and his collaborator Mr. C. V. Owen of the Historical Section of the Committee of Imperial Defence are to be congratulated on the completion of a necessary and by no means easy task. The new edition is necessary to every serious student of naval history and to all who are interested in the naval history of the Great War.

Jane's Fighting Ships, 1938. Edited by Francis E. McMurtrie, A.I.N.A. (Sampson Low, Marston & Co.). 42s.

In the Foreword to the new edition of *Jane* an estimate is made of the number of capital ships now building or about to be begun for the principal naval Powers. They total twenty-five, out of which the two British units of the "Lion" class and two Japanese vessels are reputed to be ships of 40,000 tons, armed with 16-in. guns. For the other twenty-one ships, all of the 35,000-ton species, descriptions of varying adequacy are given, the revised plans for the six battleships of the "North Carolina" class (U.S.N.) showing a considerable amount of detail. A main armament of ten 14-in. guns is now attributed to our "King George V" class, but this statement is not derived from any official source. The two foreign battleships completed during 1938—the French "Strasbourg" and German "Gneisenau"—are paired for comparison on the frontispiece, and are further illustrated by additional photographs elsewhere.

The "Ark Royal"—the largest combatant ship completed for the Royal Navy since 1917, is represented by large plans and by three photographs. She has the double distinction of having the largest complement ever embarked in a British ship-of-war and the longest flying deck of all our aircraft carriers. A notable feature in her design is that she carries the whole of her main armament over and outside her waterplane area. Building or projected there are in British and foreign shipyards fourteen other new carriers listed in *Fighting Ships*.

One wonders if the duress of Treaty limitations has, at last, driven the leading maritime states into a common accord upon cruiser-armament! The nine "Fijis" and two "Edinburghs" of the British Navy, the four American "Atlantas"; the three French ships of the "de Grasse" class; the Japanese "Tone" and "Tikuma," and two German ships as yet unnamed range from 8000 up to 10,000 tons, and

there is no great disparity in their designed speeds, but they are all planned to carry a common armament of twelve 6-in. guns.

The " Edinburghs " are to be modified " Southamptons," with the fore funnel stepped about 60 ft. abaft the hangars and the second funnel close to the after superstructure. The ten new light cruisers of the " Dido " class appear to be a derivation from the " Arethusas," but will each have a battery of ten 5.2-in. (dual purpose) guns mounted in pairs on the centre-line. Going abroad, the most interesting types of foreign cruisers, added in the new *Jane*, are the four Soviet ships of the " Kirov " class, and two new units planned for the Netherlands Navy.

France has crowned her long series of big *contre-torpilleurs* by the completion of the " Mogador " and " Volta." Here we have a kind of sublimated destroyer of 2284 tons, armed with eight 5.5-in. guns and ten torpedo tubes, and engined for a designed speed of 38 knots. To these Italy makes a formidable rejoinder in the shape of her twelve new " Regolo " class now under construction. This is a type of 3362 tons, carrying eight 5.3-in. guns and eight tubes, and powered for a speed of 41 knots. In the twelve new craft of the " Leningrad," " Tashkend " and " Stremitelni " classes, Soviet Russia is producing vessels of about 2600 tons, equipped with five or six 5.1-in. guns and six to nine tubes, with designed speeds of 36 to 39 knots.

Fighting Ships informs us that the new British flotilla leader " Laforey " (1965 tons) and the seven destroyers of the " Lightning " class (1960 tons) will be the largest torpedo craft yet built for the Royal Navy. At present it is rather hard to discern what advance in combatant qualities is to be derived from this increase in size. The armament is to comprise six 4.7-in. guns and eight 21-in. torpedo tubes ; the designed speed is still only 36.5 knots. For a rise of 110 tons above the displacement of the " Tribals," the " L " class will lose two 4.7-in. guns, gain four tubes, and have only an equality in speed. By comparison with the " Javelin-Kandahar " destroyers, the " Lightnings " have the same number of 4.7-in. guns, half a knot more speed, but carry two tubes less.

In the submarine category, France is challenger to the record, now held by our " Thames " class, of being the fastest Diesel-driven submarines in the world. Our neighbour hopes to realize a surface speed of 23 knots with her new " Morillot " class. For years past, there have been reports of a miniature type of Japanese submarine, and *Fighting Ships* is now able to produce a photograph of one of these peculiar little boats.

In our own Navy, sundry interesting transformations are in prospect. The five light cruisers of the " C " class are all destined for conversion into anti-aircraft ships. *Fighting Ships* has two illustrations showing the ex-destroyer " Whitley " after her rearmament and alteration into an escort vessel. Nearly all our flotilla leaders of the " Admiralty " and Thornycroft types and destroyers of the " V-W " types, completed in 1917–18, are said to be reserved for a similar change of rating in the next two years. We also ascertain, from *Jane*, that about eighteen of our escort vessels, belonging to the " Bridgewater," " Hastings," " Shoreham " and " Grimsby " types, are each to be rearmed with six 4-in. A.A. guns.

At home and abroad, ashore and afloat, *Fighting Ships* enjoys a well-merited reputation for its accuracy and completeness as a registry of the warship types of the world. Useful as it has been in the past as a work of reference, it is even more valuable in these present times, when a world-wide renovation and reinforcement of sea defences is taking place.

Samuel Pepys : The Saviour of the Navy. By Arthur Bryant. (Cambridge University Press). 12s. 6d.

Mr. Arthur Bryant first planned his biography of Samuel Pepys in two volumes, but found himself forced by the wealth of material at his disposal to re-plan it in three. The third volume has now appeared, but it carries the story only to Pepys' abandonment of office after the "Glorious Revolution." Some fourteen years of life remain, and so, in due course, we are to have the pleasure of a fourth volume, and a pleasure it will certainly be, if Mr. Bryant can maintain the standard he has reached in the volume now before us, for it is admirable in every way.

So far as the interest of the material is concerned perhaps that will be too much to expect, for the present volume covers, for the naval historian at least, by far the most interesting and important years of Pepys' life. Recalled to the service of the Navy after five years' absence, Pepys first accompanied Lord Dartmouth on his expedition to demolish the fortifications of Tangier, and there entered upon the office of Secretary of the Admiralty ; in reality he was a Secretary of State for the Navy with direct access to the Sovereign. He found things in such an appalling condition as a result of the administrative neglect of the "Land Admirals" that scarcely a ship could put to sea. When he laid down his office some four years later, a first-class fleet was in existence—a fleet more unwilling than unable to maintain his Royal Master on the throne (in this connection Mr. Bryant has perhaps given not quite sufficient attention to Mr. Powley's *English Navy in the Revolution of* 1688), but fully competent to give a good account of itself against the French in the next reign. The story of how this result was obtained by means of the appointment of a special commission is a fascinating one, and Mr. Bryant sees to it that it loses nothing in the telling. The contrast between the mature Mr. Secretary Pepys, corresponding on equal terms with the greatest in the land, and sternly checking the faults of his subordinates, and the earlier Mr. Pepys of the Diary, devoted to his job, it is true, but furtively naughty and not over-scrupulous, is excellently brought out. Something of the old Samuel remained, however, as may be seen in his procuring the presence of Anthony Deane on his special commission at an enhanced salary by the simple process of grossly libelling every other candidate for the position—admittedly Deane was the right man—it is just something in the method.

The reconstruction of the Royal Navy and the character of Mr. Pepys are by no means the only points of interest in this volume. Pepys lived in stirring times when Dutch William landed at Torbay, and not the least of the author's merits is the skill with which he guides us through the maze of the Revolution without losing sight of his hero. One might disagree with a judgement here and there—Mr. Bryant is a thought partial to the Stewart cause, though he has a shrewd insight into James's character—but the story is always clear, and the opinions sane.

Mr. Bryant's style matches the excellence of his material. It has matured somewhat since his last volume, it was always light and easy, but occasionally lost its dignity ; but in this volume never. He deserves the highest praise and many readers.

Sea Power in the next War. By Commander Russell Grenfell, R.N. (Geoffrey Bles). 5s.

This work presents a clear and logical exposition of the principal problems affecting sea power in the future. One is the function and size of the battleship, which the author would prefer to see smaller than 40,000 tons, in order to reduce the risk of attack from aircraft and submarines. The great development of air power will necessitate the use of bases outside the zone of air attack and a new technique of

defence. It is difficult, he remarks, to know what active part large battleships could play in a war with Germany or Italy; but he does not say how the great capital ships which those countries are building are to be brought to book if we build less powerful vessels. Stress is laid on the necessity for providing an ample number of small vessels, such as small cruisers, destroyers, sloops and patrol boats, but one is bound to remember that one of the lessons of the late war is that small craft cannot stand up to big craft. Air power will increase the heavy handicap already imposed by the submarine on attempts at invasion, for it will not only enable any such expedition to be seen long before its arrival, but will ensure its being attacked heavily from the air when it does arrive.

Another question discussed in the book is the possibility of keeping the Mediterranean route open in the face of hostile Italy. This would depend largely on French naval aid and air co-operation, but if it were not possible, its abandonment would not in the author's opinion involve vital injury to Imperial communications. The chief naval requirements of Australia and New Zealand are small craft, and a force of thirty or forty destroyers and fifteen to twenty submarines should not be beyond Australian resources. These are all big questions and may elicit diverse replies, but the views are presented reasonably and tolerantly, and Commander (who is actually Captain) Grenfell's book can be recommended as a valuable little handbook on the subject of which it treats.

MILITARY

Military Operations, France and Belgium, 1916, Vol. 2. Compiled by Captain Wilfred Miles. (MacMillan). With Maps and Appendices. 22s. 6d.

The second volume of " 1916 " starts with the second day of the Somme battles. The first day, as General Edmonds writes in his admirable preface, " determined the future course of the offensive." Sir Douglas Haig had hoped on the first day to take the whole of the enemy first position and with his left wing part of the second. There now ensued a succession of attempts to make good his initial failure and by hard, dogged fighting to reach the Bapaume–Miraumont Line, whence he hoped to start his northward movement against the flank and rear of the forces confronting his Third and First Armies. It was a race against time. For the first six days of the battle it was calculated that the enemy could bring up only local reserves, but after that date reinforcements of men and heavy artillery must be expected from before Verdun and Prince Rupprecht's front in the North. The delay in the capture of Mametz Wood was fatal. It was taken only on the 12th July, and Rawlinson's boldly planned and brilliantly executed attack on the 14th was robbed of complete success, because the Germans had been given time to construct their " Switch Line " through the northern end of High Wood. Again on the 15th September, Rawlinson captured a considerable part of the German third position, but his right was held up before Morval and Lesboeufs, and in the meantime fresh German lines of resistance were being thrown up covering Bapaume. Bad weather set in unusually early that autumn and the British soldier found mud—Napoleon's fifth element—his worst foe. When the campaign closed down in the middle of November, Bapaume and Miraumont were still in German hands.

The compiler has done his work admirably: this volume worthily maintains the high standard set up by the earlier volumes of *Military Operations in France and Belgium*. Following closely the lines marked out by the Official War Historian, he has mainly concerned himself with setting forth the policy of the High Command, the play of forces which compelled modifications of the original plans, and the opera-

tions of the various units down to brigades and even sometimes battalions; from criticism he has carefully abstained, though incidental remarks show that he was far from blind to faults of leadership and lack or enterprise. "Certain it is that some penalty had to be paid for the failure to take advantage of the opportunities, which had offered themselves on this (Longueval–Bazentin) front immediately after the first day of the offensive." Even of the subsidiary attack at Fromelles, barren of results at the cost of 7000 casualties in the two divisions engaged, he writes with studied moderation. "The pity of it was that the action need not have been fought, since the First Army had perfect liberty to cancel it."

Only over the question of the Somme losses is there likely to be controversy. In the preface, General Edmonds sets himself to prove that the German losses were greater than those of the Allies. The gross total of the Allied losses amounted to nearly 624,000, of which rather more than two-thirds were British. The German Official History puts their casualties on the Somme at "about 500,000." This estimate does not include "the wounded, whose recovery was to be expected within a reasonable time," and also excludes the losses during the seven days' bombardment. Adding 30 per cent. for the first category and 10,000 for the second—by no means excessive estimates—he arrives at a total of 660,000. In a second set of figures, based upon the returns of the German Casualty Enquiry Office, which gave the gross Somme losses, from July to October, he raises the grand total to 680,000. From this must be deducted 45,000 for the November losses, which has been inadvertently inserted twice over, but even so the resulting 635,000 suffices to prove his point. The fact that "the medical reports repeatedly give considerably higher figures than the Army returns" confirms the suspicion that the German authorities deliberately minimized their losses. Indeed, General Edmonds expects "in the course of time to prove conclusively that the German losses in dead were about double the number officially stated." But, if he has proved that the German losses were greater than the Allies', he has not proved that they exceeded those of the British only, which was the point on which he joined issue with Mr. Lloyd George and Mr. Winston Churchill. According once more to the German Official History, the losses inflicted by the French alone fall very little short of half the total officially admitted. This conclusion is, however, very different to reconcile with the evidence, drawn from the same source, that of forty-two divisions, in addition to the original eleven, put into the line in July and August, thirty-five were sent to the British front.

The 33rd Division was transferred to the XV Corps, not the II (p. 36).

The British Army and the Continent, 1904-1914. By T. E. Tyler. (Edward Arnold & Co.). 10s. 6d.

The somewhat clumsy title of this work tends to obscure the real nature of Professor Tyler's brilliant essay on the inter-dependence of policy and strategy. This book tells the story of the British pre-war military conversations with France and Belgium and brings them into relation with the larger question of British foreign policy at that time. Before the Boer War, it is safe to say that a campaign in Europe was scarcely one of the objects for which the British Army was maintained. It was the conclusion of the Anglo-French Agreement in April, 1904, which raised the possibility of British troops fighting on the Continent of Europe.

The British General Staff—then but newly formed—took up in 1905 as one of its first problems, a study of the probable course of a Franco–German war and came to the conclusion that a German violation of Belgian neutrality was a most likely

contingency. Owing to the gradual deterioration of Anglo–German relations and the increasing tension throughout Europe, Sir Edward Grey—British Foreign Secretary, authorized, in January, 1906, a series of military conversations between the War Office and the French High Command. On the British side, these negotiations were initiated by General Grierson—Director of Military Operations, who had as his opposite number Colonel Huguet—French Military Attaché in London.

There were, at this time, three main schools of thought in England as to the most effective method for British intervention in a possible Franco–German war. Sir John Fisher—First Sea Lord, appears always to have believed in " amphibious warfare," in joint naval and military operations. As he put it," the invincible navy " was to be the " citadel of the military force." Fisher could never bring himself to agree with the strategic soundness of sending an Expeditionary Force to form but a slight addition to the numbers of the French Army. Grierson's plan also, though contemplating the despatch of an Expeditionary Force to the Continent, laid considerable emphasis on sea power. He was anxious for a landing at Belgian ports and for action, in combination with the Belgian Army, on Belgian soil. Later, if circumstances permitted, he strongly advocated the despatch of forces based on Antwerp and the sea to menace the flank or rear of German troops seeking to operate farther West. Both these schools of thought—though differing over details—had many points of agreement and advocated action fully in keeping with our traditional policy.

The third doctrine had as its protagonist General Henry Wilson. This officer, who succeeded General Ewart in 1910 as Director of Military Operations, was an out-and-out advocate of unlimited participation in a Continental war and of alignment with the French Army against the common foe. As Commandant of the Staff College, he had occupied a unique position for the furthering of his views on this subject and in 1909 came under adverse criticism from Lord Kitchener, who was rightly anxious lest " we should be tacked on to a French plan that might not suit us."

As time went on, a clash between these opposing view-points was inevitable. In the Spring of 1911, there suddenly arose one of those crises with which we are today so painfully familiar. The German Government, with a view to extracting large colonial concessions from France under the threat of war, despatched the warship " Panther " to the Moroccan port of Agadir. Mr. Winston Churchill has given a vivid account of a meeting on 23rd August, 1911, of the Committee of Imperial Defence, which had been secretly summoned by the Prime Minister to consider the measures required to meet the threatened war. It was General Wilson's duty to state the case for the General Staff and this he did with all the wit and facility of speech, of which he was such a master, in an interview lasting nearly two hours. After lunch, Admiral Sir Arthur Wilson tersely expounded the Admiralty view of the war problem. The majority of the civilian members, highly impressed by the personality and arguments of General Wilson, disapproved of the Admiralty policy and accepted the views of the General Staff.

General Wilson did without doubt secure an important personal success, but whether this was ultimately in the best interests of his country is a question that has been fiercely debated. Be this as it may, the historic meeting of 23rd August, 1911, settled the main outlines of Britain's participation in the coming Continental war and foreshadowed the battles of the Western Front, where so many of her sons were to lay down their lives. This is a book that no officer of the Services can afford to neglect.

Supply in Modern War. By Bt. Lieut.-Colonel G. C. Shaw, R.A.O.C. (Faber & Faber). 12s. 6d.

The title of the book might well be " Mobility," for that is its constant theme ; and we are told that supply is to-day stultifying the ability to move in its endeavour to increase the power to fight. This book deals with the system of supply in war to military or land forces ; the word " supply " being used in the wider sense, covering the whole field of requirements. It is thus not confined to provisions and other items that, in the British Army, are known technically as " Supplies." The author does not accept the general organization for war of present day armies, which he castigates as " horde armies," and urges instead an organization based primarily on the fast-moving armoured fighting machine.

The great importance of mobility is stressed throughout the book, and none will gainsay it. But whether we have yet reached the stage where we would be justified in abandoning our present conceptions of military organization and trust mainly in the machine is another matter. Even the author does not seem too certain, though from the general tenor of his arguments, he would have us believe otherwise. On page 150 it is stated, in connection with mechanical transport, that" . . . . it is possible for modern military vehicles to cross any terrain likely to be met with in the Empire, or on active service " ; whereas on page 167 we have, "At present, the vehicle's powers of cross-country movement are limited." Consider also, in connection with the lavish criticisms of existing organization, the following picture of war in the future :—

> " . . . decisive victory will be obtainable only by a complete and overwhelming surprise. Standing armies only will be employed and there will be no time for the preliminary mobilization of masses of men." (*) (page 182).
>
> " . . . strategical surprise is to be attained through the formidable power instantly released, which would consist of troops entirely machine powered. These swiftly moving mechanized or motorized formations would be assisted or preceded by aircraft ; while behind, as soon as mobilization permitted, would follow by rail and road massed man-power armies as they were in the Great War, to inundate the enemy's frontier or to guard their own." (page 183).
>
> " The fortified town, the strongly held forest belt, the picketed river line, the mountain chain, or a powerful trench system, will all enforce likely occasions for the involuntary slowing-up of mechanized mobility. Such will be the times, and such the occasions, when the fighting vehicle may have to stand off and lick its wounds, while the work of advance is carried on by the more slowly moving and older arms." (page 230).

We will not fail to notice in the above quotations from the book, the massed man-power armies hastening forward by rail and road, nor the older arms carrying on the good work while the fighting vehicle is *forced* to stand off. And so our faith in the sincerity of arguments for precipitate and radical changes in military organization is somewhat shaken ; we still apparently need armed man-power, and the belittling of " horde armies " is therefore rather overdone.

The author has certainly done something towards repairing the deficiency of literature on the subject of military administration, of which he justly complains. The presentation of the subject matter might, however, have been considerably simplified and the book made thus more readable.

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* Quoted by the author from a summary in the R.U.S.I. JOURNAL, November 1935, p. 879, of an article published in the *Bulletin Belge des Sciences Militaires.*

A preface to the book is written by Major-General J. F. C. Fuller, C.B., C.B.E., D.S.O.

REGIMENTAL HISTORIES

The History of the Guides, 1846-1922. (Gale and Polden, Ltd.). 25s.

The circumstances attending the raising of the Guides are both interesting and remarkable. The Corps was formed at the suggestion of Colonel H. M. Lawrence—Agent for the Governor-General, N.W.F., by an order of Lord Hardinge, soon after the conclusion of the Sutlej campaign, March, 1846.

The idea underlying this proposal was: " that in the same body of men shall be united all the requisites of regular troops with the best qualities of guides and spies. . . . To insure this combination of so many diverse qualities, the Corps has been composed of the most varied elements; there is scarcely a wild or warlike tribe in Upper India, which is not represented in its ranks." And, to assist them in their duties, all Guides officers had, in the early days, full magisterial powers.

Space does not permit of a description of the numerous operations—Ambeyla, second Afghan War, Chitral, Malakand, the Pathan Revolt, 1897, etc., in which the Corps was engaged during the next half century, but, broadly speaking, it may be affirmed that the Guides played a distinguished part in almost every campaign on the frontier during that long period.

The outbreak of the Great War found the Corps in their usual high state of preparedness. Sir James Willcocks—Commander of the Northern Army, wrote of them: " The Guides cavalry is ready to go anywhere and do anything. . . . They (the Infantry) are still as ever impossible to beat. The same fine spirit animates all ranks."

From 1914 to 1916, the services of the Corps were in continual demand for operations in Swat and Buner and against the Mohmands, where they formed a highly-trained nucleus round which the new units hastily raised and trained for the duration of the war could be grouped.

At last, however, the call came, and, in 1917, both the Guides Cavalry and Infantry were ordered overseas to Mesopotamia. The Infantry did not stay there very long and, in December, sailed for Palestine where they took part in the decisive battle of Sharon and the capture of Beit Lid. The 2nd Battalion, The Guides Infantry (raised in January, 1917) also fought in the victorious campaign under Lord Allenby in Palestine. After the War, this unit was converted to a training battalion, which it still is. The 3rd Battalion (raised in October, 1917) did useful work on the N.W.F., served in the Kurram valley and took part in the capture of Amir Thana Post and the action of Spinkai Gash. The battalion—like many others—was disbanded in 1919.

The Cavalry were engaged on the Rivers Tigris and Euphrates and formed part of the 11th Cavalry Brigade under General Cassels at the crossing of the Lesser Zab, October, 1918, where, after fierce fighting, they assisted in the capture of over 11,000 Turkish prisoners, 51 guns, 130 machine guns, and 2,000 animals.

History of the Bombay Pioneers. By Lieut.-Colonel W. B. P. Tugwell. (The Sidney Press, Ltd., London and Bedford). 10s.

In a book of four hundred pages, Colonel Tugwell has set down a most readable account of the many actions and achievements of the five battalions of his old Corps. Moreover, the production of this volume is on a higher plane than that of

the histories of many Indian regiments. A coloured frontispiece, by Mr. C. C. P. Lawson, showing uniforms of the Corps, heads a list of over fifty illustrations and seventeen maps; and there are thirteen appendices.

But tragedy lies behind this lavishness, for it clearly indicates the expenditure of regimental funds no longer needed because the units have been disbanded. In these days of mechanization it seems extraordinary that road-making soldiers should be demobilized. But the Government of India was faced five years ago with an unescapable demand for economy in all departments. In the military department the pioneers were chosen to be the unfortunate victims of the "axe": they all disappeared from the Indian Army List.

Until the XIXth Century none of the regiments which were amalgamated in 1922 to form the 2nd Bombay Pioneers had yet become a pioneer unit. The senior component regiment was raised in 1777 as the Marine Battalion of the Bombay Army. In 1788 and 1846 two others were raised as Bombay line infantry. A fourth was formed in 1838 for the ill-advised attempt to put Shuja-ul-Mulk on the throne of Afghanistan. Four years later its gallant conduct in an historic siege earned it the title of "The Kelat-i-Ghilzie Regiment." The youngest battalion was raised in 1901 specifically as Bengal Pioneers. That it should have proved possible to combine in one volume the histories of such units, quite unconnected for the far greater part of their lives, speaks for that spirit of happy co-operation which the best Indian regiments showed towards the necessary reorganizations of 1922.

The book has an introduction by Field-Marshal Sir Claud Jacob, G.C.B., G.C.S.I., K.C.M.G., who raised another regiment of pioneers.

AIR

Jane's All the World's Aircraft, 1938. Compiled and Edited by C. G. Grey and Leonard Bridgman. (Sampson Low, Marston & Co., Ltd.). 42s.

This comprehensive volume in its twenty-eighth year of issue sums up the world's progress in aviation during the twelve months ending about the middle of November, 1938. It is sufficiently up-to-date to show the World record for distance in a straight line, set up by Squadron-Leader Kellett and his co-pilots in two Vickers Wellesley monoplanes, on 5th–7th November last.

The book has even more scope than its title would indicate; following upon a preface which admirably sums up the general trend of aviation, it is divided into five sections as follows: civil aviation progress, military aviation progress, aeroplanes, engines, and airships.

The preface, by Mr. C. G. Grey, Editor of the *Aeroplane*, sums up in four pages the trends disclosed by the vast amount of data covering a further 600 pages of type and illustrations. That summing up is of more than passing interest to any student of military history. For example, Mr. Grey refers to the slight reduction in the size of the volume as compared with last year, and ascribes this to a reduction in types of aircraft, particularly in France. The collapse of the French aircraft industry, following on nationalization, has reduced the number of pictures of French aeroplanes by thirty-four, consequent upon the stifling of private enterprise and initiative. Germany, on the other hand, with her genius for organization, and all the drive of which dictatorship is capable, has eleven more aircraft illustrations than last year.

Another interesting comparison has been drawn between the numbers of old and new types: the United States has sixty-one old and fifty-four new; Great Britain

fifty-five old and fifty-six new; Germany, twenty-six old and forty-five new; France, thirty-five old and twenty-one new; and Italy, thirty old and twenty-three new.

Turning to British aircraft production, Mr. Grey refers to the effort required for the making of special tools and the layout of modern factories—an investment of time and labour which reaps its due reward when mass production is required, as in war.

The historical section provides innumerable excellent illustrations of aerodromes, other pictures taken from the air, and maps of air routes. The aerodrome illustrations show the growth of the runway method of construction. Reference must be made to the illustrations of Singapore, " the Empire's greatest airport "; a caption on page 28a reads " otherwise known as Japan's finest target "; this apparently assumes that both the Navy and the Air Force would remain entirely inactive during attack, as it is surely not one of the functions of a target to hit back.

An immense amount of information appears in the sections dealing with aircraft and engines; there are more monoplanes than in the past, streamlining and speed have improved, and there is no diminution in the number of British engines used in foreign aircraft, particularly engines made by Bristol, Rolls-Royce, Armstrong-Siddeley, and De Havilland.

As usual, the binding, printing, plate paper and illustrations are beyond reproach. The book is already such good value that it is perhaps asking too much to suggest that a nominal index would be an advantage; then one could find without delay where Singapore is described, or who makes the Walter engines.

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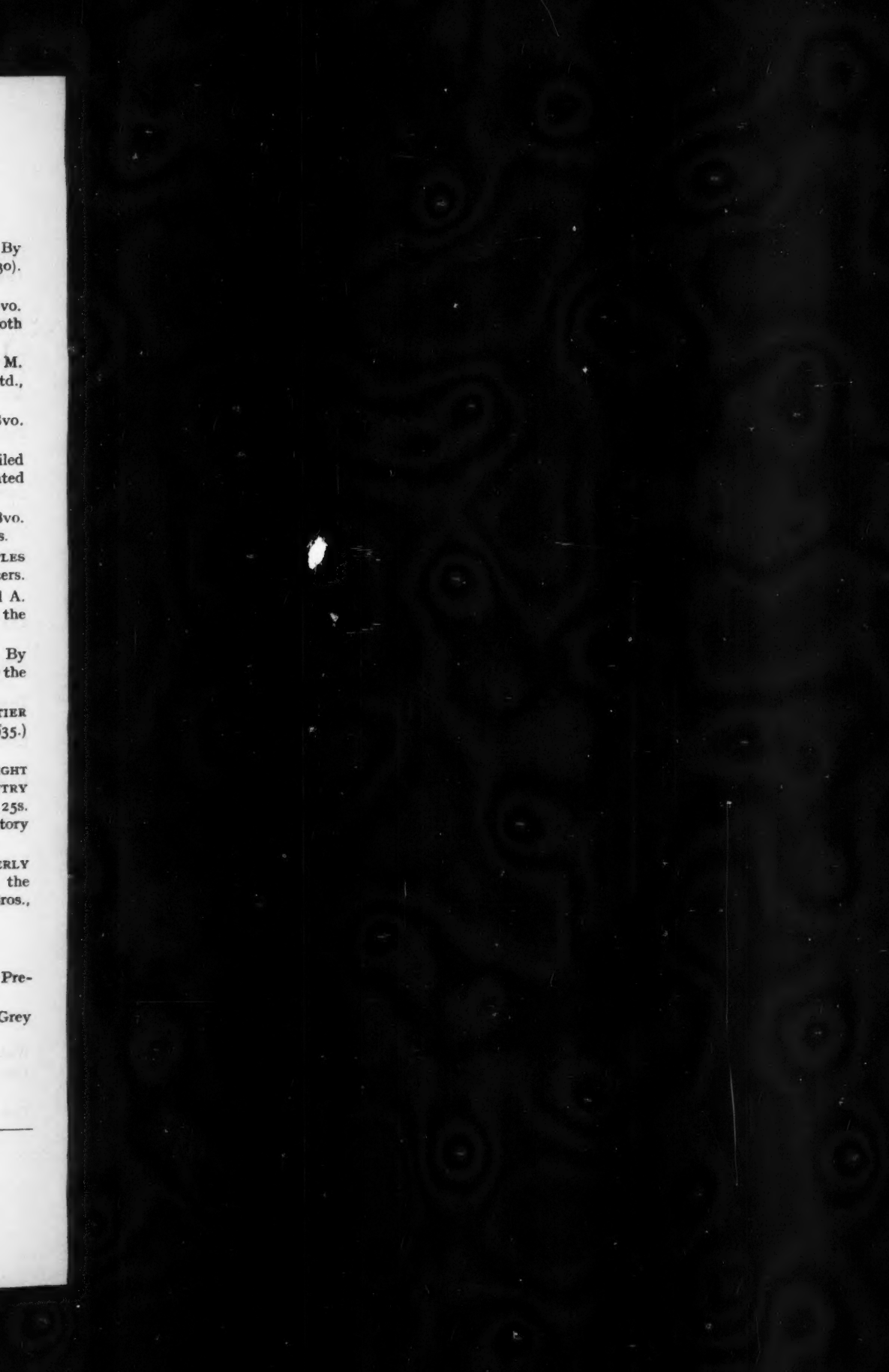

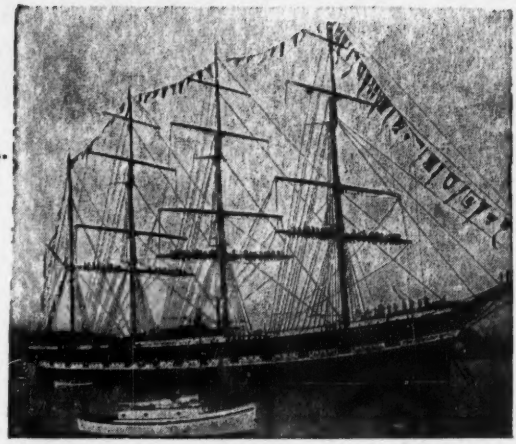

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Balances in Account with Subsidiary Banks	13,632,314	
		433,081,185
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Money at Call and Short Notice		26,207,550
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Investments in Subsidiary Banks (at cost, *less* amounts written off):		
The British Linen Bank—£1,240,344 12s. 6d. Stock		3,721,034
The Union Bank of Manchester Limited—300,000 Shares of £5 each, £2 10s. paid		750,000
Other Banks—(including fully paid Shares and 500,000 "B" Shares of £5 each, £1 per Share paid up, in Barclays Bank (Dominion, Colonial and Overseas) and 1,000,000 Shares of £1 each, 5s. per share paid up, in Barclays Bank (France) Limited)		2,525,525
Advances—Customers and other Accounts	198,430,778	
Balances in account with Subsidiary Banks	1,022,202	
		199,452,980
Liability of Customers for Acceptances and Endorsements, &c.		14,933.082
Bank Premises and Adjoining Properties (at cost, *less* amounts written off)		7,446,790

HEAD OFFICE:

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Over 2,100 Branches in England and Wales.

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